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The Role of Web-Based Social Networking on Career Success and Worker Well-Being: A Social Capital and Job Demands-Resources Approach

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THE ROLE OF WEB-BASED SOCIAL NETWORKING ON CAREER SUCCESS AND WORKER WELL-BEING: A SOCIAL CAPITAL AND JOB DEMANDS-RESOURCES APPROACH

by

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Dedication

This is for Alissa, my wife.

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To Henry, my son, your spirit and soul make me whole.

Abstract

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Through two studies, this research is some of the first to-date to test how the use of social networking websites affects worker well-being and career success. In a period of less than a decade, online social media has quickly redefined many core aspects of human relationships. In 2012, the website, Facebook, reported that one in eight people worldwide used the site weekly. Given such prevalence, this research has far reaching implications for U.S. workers and organizations. The first study (N = 238) used structural equation modeling to examine the effect of site use with coworkers on well-being through increases in the job resource, coworker support, and the potential reduction of burnout, effort reduction, and turnover intentions. Partial support for the first study's hypotheses was detected, specifically concerning the negative consequences of stress-focused online coworker interactions. Study 2 (N = 298), a social capital approach, compared the amount of career resources between those who use online social media and those who do not. The results widely supported the hypotheses with the social media users reporting more contacts in other functions and higher levels, potential and acted-on career endorsement relationships, and weak tie work-related relationships. These results remained significant when controlling for the potentially biasing effects of age and personality. Additional research is needed to provide individuals with valid and reliable direction for how online social media may benefit their careers and well-being.

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The Role of Web-Based Social Networking on Career Success and Worker Well-Being: A Social Capital and Job Demands-Resources Approach

An active and broad social network affects some of the most fundamental aspects of human existence. Positive psychology supports this notion through evidence that a rich social life is one of the strongest predictors of happiness (Diener & Seligman, 2002). Health psychology research indicates that receiving as well as providing social support positively affects health and well-being in a variety of domains (Brown, Nesse, Vinokur, & Smith, 2003; Chiaburu & Harrison, 2008; Schwarzer & Leppin, 1991; Viswesvaran, Sanchez, & Fisher, 1999). A few examples of these benefits include reduced musculoskeletal pain (Ahlberg-Hulte´n, Theorell, & Sigala, 1996), increased survivability of heart disease (Berkman & Glass, 2000), recovery from severe illnesses (Speigel & Diamond, 2001), and a general reduction of morbidity in the cardiovascular, neuroendocrine, and immune systems (Uchino, 2006). Moreover, Friedman and Martin (2011) reported health and longevity predictors in an 80 year longitudinal study and results support the claim that to live a longer, healthier life, the best thing one can do is maintain positive relationships throughout one's lifetime. Although these studies were not experimentally designed and causality should not be assumed, it is encouraging that longitudinal research points toward the potential impact of positive social support.

There is ample evidence for the health and well-being benefits of a robust social system, but research also extends to non-health related, group-level perspectives in the areas of political science and sociology. In these fields, the cohesiveness of social systems has been shown to predict group-level success (Jackman & Miller, 1998; Putnam, 1993). Although not directly related to health outcomes, social networks are argued to generate a form of social capital that has been linked to success in one's career

(Siebert, Kraimer, & Linden, 2001). Coleman (1990) defined social capital as "any aspect of a social structure that creates value and facilitates the actions of the individuals within that social structure" and, although this definition is broad, it is appropriate for the current context. Additional research from industrial and organizational psychology bolsters the findings from other areas by elaborating the role of coworker and supervisor support on outcomes that benefit employee and employer alike (Chiaburu & Harrison, 2008; Halbesleben, 2006; Viswesvaran et al., 1999).

Through two distinct but related paths, the current research explored the degree to which the recent phenomenon, web-based social networking (WSN), may benefit an employee's working life and career. The first study examined WSN's effect on worker well-being through increases in the job resource, coworker support and the potential reduction of burnout, effort reduction, and turnover intentions. The second study explored the possible contribution of WSN activities on social capital resources that contribute to career success.

Social Networking Website History

The rapid spread of Internet use and connectivity has dramatically shaped communication capabilities for billions of people. From text-based email to videophone technologies, the scale of the disjointed concept of "global" has been reduced through increased level of interpersonal connectivity. Social networking websites allow individuals to interact with hundreds or thousands of others in what seems to be real-time, anywhere there is an Internet connection. Many social networking websites have come and gone since their emergence roughly fifteen years ago, with Facebook holding the current lion's share of users. Approximately one in eight people on Earth use the site

monthly and one in thirteen sign-on daily (Facebook, 2012). Facebook accomplished this impressive global presence in roughly a six-year time frame. Research on this recent social phenomenon has struggled to keep up with the pace of its growth. Peer-reviewed journal articles and conference proceedings on the subject began to appear on a semi-regular basis in 2005 and 2006, with an initial focus on how the sites are being used (e.g., meeting new people or maintaining existing connections, Lampe, Ellison, & Steinfeld, 2006) and privacy concerns (Barnes, 2006; Gross & Acquisti, 2005). Research on the effects of WSN has been expanding, and in 2008 the journal *Cyberpsychology and Behavior*, reflected this emerging area by broadening its focus and name to *Cyberpsychology, Behavior, and Social Networking*.

One challenge facing the study of social networking websites is that they are businesses naturally governed by the effects of capitalism and a competitive free market. Many sites that were once leaders in the industry have seen drastic reductions in membership (e.g., Myspace) or have gone out of business entirely (e.g., Friendster). Recently, the market has appeared to settle with Facebook, Twitter, and Linkedin as the leaders in number of site visits in the U.S. for the past three years (according to 2013 Internet traffic rankings from the web information company, Alexa.com). Perhaps a driving factor in this recent stability is the relatively distinct focus of three leading sites. Facebook has a variety of features but is primarily concerned with establishing and maintaining relationships among users in general, who, when connected, are called "friends". Twitter stands out, ironically, due to the limitation in that its users are confined to posts in 140 characters or less. Posts on the site or "tweets" are viewed by those who track or "follow" other users' content in a stream of information called their "feed." The

brevity constraint imposed on tweets works in the user's favor by enabling him or her to follow the content of hundreds of other users without being overloaded with information. Furthermore, the limited length of tweets allows them to be submitted quickly with information often presented in a near to real-time data stream (e.g., tweets on live televised events). Unlike Facebook where friends are established through invitations that must be accepted by both parties, anyone can follow anyone else on Twitter. This difference between the two sites is attractive in that users can easily follow activity of their favorite celebrities, politicians, athletes, comedians, etc. (twitter.com, 2013).

Linkedin is unique in its commitment to connecting business professionals. User profiles on Linkedin are strictly limited to professional related information like work history, education, and skills. The site is used primarily for job searching, recruiting, and maintaining relationships with other professionals. Users' relationships or "connections" are established similarly to Facebook in that an "invite" detailing the nature of the business relationship between the two individuals is sent and then must be verified in order to complete the connection request. A benefit of establishing connections is that users can keep track of each other's contact information through job changes or as projects evolve or end without the burden of having to re-distribute email addresses (Linkedin, 2013). Given the unique characteristics of these three sites and their established leadership in the industry, the current research examined their contributions to worker outcomes such as coworker support, burnout, effort reduction, turnover intentions, and resource associated with career success.

Study One

Web-based Social Networking and the Worker: The Effects of Site use on Coworker Support and Work-Related Outcomes

Through the framework of the job demands-resources model (JD-R) (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), the first section of the current research measured the degree to which WSN may be used as a conduit to deepen and broaden the relationships with one's coworkers. This growth in coworker support may also subsequently lead to the prevention and reduction in employee burnout, turnover intention, and absenteeism. These outcomes were selected, specifically, because of their history of a connection to the job resource, coworker support, and their relevance to workers and employers (Chiaburu & Harrison, 2008; Ng & Sorensen, 2008; Viswesvaran, et al., 1999). WSN coworker interactions analyzed for this portion of the current research were limited to those on the sites Facebook, Twitter, and Linkedin.

The Job Demands-Resources Model of Burnout and Worker Well-being

Although the current research examined only a portion of the JD-R, describing its history is important for establishing the model as a functional framework for the current study. The concept that one's work environment is essentially a compilation of positive and negative contributors to well-being outcomes was first formalized by Karasek in his Job Demand-Control (JDC) Model (Karasek, 1979). The basis for this theory hinges on a body of research that demonstrated the influence of perceived control over one's environment (Averill, 1973; Brady, 1958; Sapolsky, 1982). The JDC characterizes job demands as essentially elements of the job's workload. Job demands have been operationalized directly through concrete examples (e.g., physical characteristics of the

work environment) (Demerouti et al., 2001) and indirectly as general characteristics of a job (e.g., role ambiguity) (Karasek et al., 1981). Job control has been frequently referred to as decision latitude, which is composed of skill discretion and decision authority (Kasl, 1996; Wall, Jackson, Mullarkey, & Parker, 1996). According to the theory, jobs in the most strenuous work situations (high demand-low control) are a detriment to well-being, and job control moderates the strain–well-being relationship, effectively reducing its potential for harm. The latter perspective has been commonly referred to as the "buffering" hypothesis and assumes that job control can mitigate the strain associated with job demands (Ganster, Fusilier, & Mayes, 1986; Karasek, 1979).

Van der Doef and Maes (1999) summarized two decades of empirical research on the JDC, and offered some general conclusions on its efficacy. The main hypothesis, the strain–well-being relationship, was widely supported throughout various job domains and forms of control (task variation, perceived job security, task autonomy). Moreover, and relevant to the current research, this hypothesis was strengthened when the job environment was also marked by low coworker support/isolation. Support was less consistent for the moderating or buffering component of job control, which the authors attributed to the many different conceptualizations and operationalizations of demand and control. Demerouti et al. (2001) proposed the JD-R model to expand the JDC to incorporate additional beneficial job characteristics.

The foundation for the JD-R is similar to the JDC in its attempt to provide an overarching explanation of the effects of work stressors (demands) and work place characteristics (resources) that play an ameliorative role in reducing/preventing harm and generating benefit. The two theories differ mainly in that the JD-R asserts that job control

and social support are two of a variety of work characteristics that affect employee well-being and organizational outcomes. Job demands refer to, "physical, social or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain psychological and psychological costs" (Demerouti et al., 2001, p. 501). Examples of job demands are psychological and physical and include extended work hours, workplace environmental stressors, and emotionally taxing relationships with bosses, coworkers, or clients. Over time, the job demands can diminish an employee's mental, physical, and/or emotional health while also being linked to many negative organizational outcomes (e.g., job performance, turnover, absenteeism) (Bakker, Demerouti, & Schaufeli, 2004; Demerouti et al., 2001; & Hakanen, Bakker, & Jokisaari, 2011).

According to Demerouti et al. (2001), job resources refer to:

> …those physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands at the associated physiological and psychological costs; (c) stimulate personal growth and development (p. 501)."

Similar to job demands, job resources can vary widely in their nature and exist within multiple facets of an organization (e.g., physical design of a job, interpersonal relationships with coworkers and bosses, and general perspectives of the organization). Similar to the JDC, the JD-R asserts that job resources play a moderating role in reducing potential detriments that stem from job demands. For example, time demands of a large project may drive an employee toward the burnout state of exhaustion, even as this individual maintains positive relationships with many coworkers. The support generated

from these relationships may shelter the employee from reaching the burnout state. The current study focused on the job resource "coworker support" and the potential for this resource to be increased through web-based social networking interactions with one's coworkers.

Coworker support as a job resource. The strongest evidence for the benefits of coworker support stems from its view as a main effect on organizational and individual outcomes. The central hypothesis regarding this relation is that coworker support was negatively related to levels of strain and its negative outcomes (e.g., burnout, job dissatisfaction, and musculoskeletal pain). This presumption has been supported in multiple meta-analytic contexts (Chiaburu & Harrison, 2008; Ng & Sorensen, 2008; Viswesvaran et al., 1999). In a recent meta-analysis, the direct effect of coworker support was positively associated with organizational commitment and job performance (both in-role and extra-role performance), and negatively related to turnover (both turnover intention and actual turnover) and effort reduction (Chiaburu & Harrison, 2008).

Whereas coworker support, as a rule, has been demonstrated as benefiting individuals by reducing and preventing a variety of strain types, generally the effect is rather small (Chiaburu & Harrison, 2008; Viswesvaran et al., 1999). Some researchers suggest that part of the explanation for this small effect comes from the occasional study that demonstrated coworker support as *negatively* affecting the stressor–strain relation (Glaser, Tatum, Nebeker, Sorenson, & Aiello, 1999; Karasek, Triantis, & Chaudhry, 1982). Beehr, Bowling, and Bennett (2010) focused on this unexpected phenomenon by investigating styles of coworker interactions that may be harmful, despite their best intentions. Based on social information processing theory (Bateman, Griffin, &

Rubinstein, 1987; O'Reilly & Caldwell, 1985), and stress-as-offense-to-self theory (SOS) (Semmer, McGrath, & Beehr, 2005), the researchers characterized three social interaction processes that, although designed to be helpful, may actually be non-helpful or even detrimental. The researchers hypothesized that three potential coworker support situations would be positively related to strain and also moderate the frequently observed stressor–strain negative relationship. The three situations studied were as follows: (a) social interactions with potentially supportive people that lead the employees to focus their attention on the stress at the workplace, (b) help from other people that makes employees experience a threat to their self concepts (i.e., makes them feel inadequate), and (c) help from others that is unwanted.

Results of their study supported each of their hypotheses regarding the three social interaction situations, but the largest effect they observed was for interactions that were stress-focused. That is, stress-focused interactions with coworkers were positively related to psychological strain, even after holding the effects of three stressors (role ambiguity, role overload, and interpersonal conflicts) constant. Relative to the current research, stress-focused WSN interactions with coworkers are predicted to negatively affect the typically benevolent effect of coworker support. Given that the other two situations studied in Beehr et al. (2010) involve instrumental support, which can require face-to-face interactions, they were excluded from the current study due to lack of WSN relevance. If social networking sites are being used to highlight the negative aspects of one's job or employer this may increase the negative impacts of job strain. Related to, but extending Beehr et al.'s (2010) research to the domain of WSN, the following hypotheses were tested (see Figure 1 for a graphic display of Hypotheses 1 and 2):

Hypothesis 1: Stress-focused WSN work-related interactions with coworkers will be positively related to participant levels of burnout, turnover intention, and effort reduction. Although not a novel hypothesis, yet important to substantiate Hypothesis 2b.

Hypothesis 2a: Instrumental and Emotional coworker support will be negatively related to burnout, turnover intentions, and effort reduction.

Hypothesis 2b: The anticipated observed coworker support–burnout, turnover intention, and effort reduction negative relations will be moderated by stress-focused WSN work-related interactions.

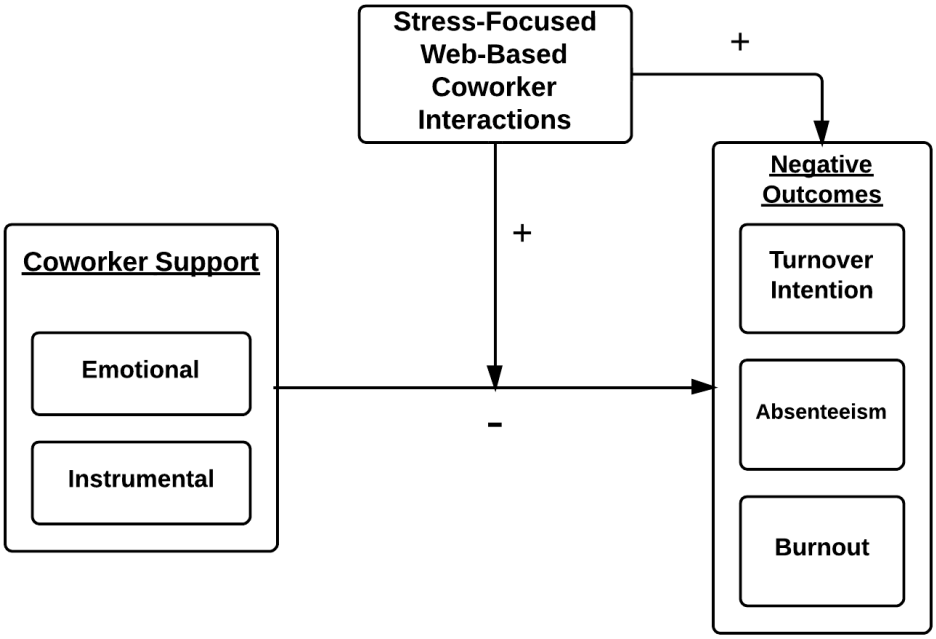

Figure 1. The conceptual model of Hypotheses 1 and 2.

Coworker support has also been studied as a possible moderator variable in the relationship between stressors and strains. Yet, results for coworker support as a moderator have been mixed with some research detecting an effect (LaRocco, House, & French, 1980; Terry, Nielsen, & Perchard, 1993) and others failing to (Ducharme &

Martin, 2000; Ganster, et al. 1986). For example, the results of Greenglass, Fiksenbaum, and Burke (1996) favored the moderating/buffering hypothesis for reducing burnout among U.S. teachers, yet Ross, Altmaier, and Russell (1989) did not obtain similar findings among U.S. psychological counsellors. These results are complicated by the two studies using different instruments to measure the same constructs. Multiple definitions of the coworker support construct (Caplan et al., 1975; Himle, Jayaratne, & Thyness, 1991) and the wide variation of sample populations, predictors, and outcomes have been discussed as explanations for the range of coworker support "buffering" hypothesis results (Chiaburu & Harrison, 2008; Ng & Sorensen, 2008; Viswesvaran et al., 1999).

Regarding subscales or dimensions, coworker support has been parsed into the two forms, *instrumental* and *emotional* (Caplan, Cobb, French, Harrison, & Pinneau, 1975; Ducharme & Martin, 2000; House, 1981; Kauffman & Beehr, 1986). *Instrumental support* describes concrete assistance in performing tasks or other job duties and has been defined as, "rendering tangible assistance, such as physical assistance or aid in the form of advice or knowledge needed to complete a task" (Fenlason & Beehr, 1994). Conversely, *emotional coworker support* is defined by Fenlason and Beehr (1994) as "the action of caring or listening sympathetically to another person." (p. 166). Although there is some evidence for the two forms being correlated (House, 1981; Kaufmann & Beehr, 1986), they have also been demonstrated as distinct dimensions (Ducharme & Martin, 2000). The current study used these conceptualizations of the coworker support construct in an attempt to connect it to WSN behaviors.

WSN activities as a contributor to coworker support. Given the minimal amount of existing research literature on the topic of WSN and its effect on employees, research

from a variety of perspectives was used to theoretically frame the current research design. In their research on university students, Ellison, Steinfield, and Lampe demonstrated support for WSN activities generating social capital in two studies (Ellison et al., 2007; Steinfield, DiMicco, Ellison, & Lampe 2008). The first of the studies, cross-sectional in nature, supported their hypothesis that intensity of Facebook use (a composite measure created by the authors) would be positively related to bonding social capital. Bonding social capital represents strong social connections, and Ellison et al. (2007) speculated that the support for their hypothesis could be from Facebook acting as a medium to strengthen existing relationships. The authors extended their research to a longitudinal study that, over the course of a year, demonstrated additional support for the Facebook intensity–bonding social capital hypothesis (Steinfield et al., 2008).

A case study of IBM's intra-web social networking website, Beehive, offers additional insight into the potential effect of WSN on employees (DiMicco et al., 2008). Using grounded theory to code transcripts of structured interviews with site users, the researchers attempted to answer three questions: With whom are employees connecting? What are their motivations for connecting? and What type of content is being shared on the site? A variety of themes relevant to the current study's focus on WSN and coworker support were coded by the authors of this study using grounded theory (Glaser & Strauss, 1967). Regarding their first research question, IBM employees described using *Beehive* to deepen existing and establishing new relationships with colleagues. These results align with the aforementioned WSN studies in that strengthening deepening existing relationships with coworkers is an act of broadening one's bonding social capital (Ellison et al., 2007; Steinfield et al., 2008). Moreover, the use of *Beehive* to extend one's

bonding social capital network was empirically supported in an additional study that partnered the Facebook researchers with an IBM internal researcher (Steinfield, DiMicco, Ellison, & Lampe, 2009). The current study is the first to examine the degree to which coworker interactions on non-work related Internet sites contribute to bonding social capital. Regarding the second and third research questions, their interviews indicated that the main reason for employees using *Beehive* was what the researchers named, *caring*, and that the dominant forms of content being shared were opinions about the company and personal information. *Caring* was a common theme across all participants and was characterized by the researchers as reaching out to coworkers on work and non-work related topics. From a content/face validity perspective, this dominant use of the IBM site closely resembles Fenlason and Beehr's (1994) instrumental (in the form of advice) and emotional coworker support. Although an intra-web site is not entirely comparable to Internet sites such as *Facebook*, *Twitter*, and *Linkedin*, the qualitative results of this study are encouraging and warrant further investigation.

Given the positive findings on coworker support as a job resource and WSN as a method to establish new, and strengthen existing, relationships, the following hypotheses were tested: (see Figure 2 for a depiction of Hypotheses 3and 4):

Hypothesis 3a: The number of contacts one has on WSN sites (*Facebook*, *Twitter*, and *Linkedin*) who are also coworkers will be positively related to reported levels of *emotional and instrumental* coworker support.

Hypothesis 3b: The number of contacts one has on WSN sites (*Facebook*, *Twitter*, and *Linkedin*) who are also coworkers will be related to lower levels of burnout, turnover intention, and absenteeism.

And related to the Ellison et al. (2007) research on the variable they created called, *Facebook Intensity*, and also an attempt to capture the quality and frequency of WSN coworker interactions (rather than simply the number of WSN coworker contacts):

Hypothesis 4a: Intensity of WSN (*Facebook*, *Twitter*, and *Linkedin*) activity with coworkers will be positively related to bonding social capital.

Hypothesis 4b: Intensity of WSN (*Facebook*, *Twitter*, and *Linkedin*) activity with coworkers will be positively related to *emotional* and *instrumental* coworker support. One moderated relation is also current as reference to the Beehr et al. (2010) study that demonstrated the negative impact of stress-focused coworker interactions.

Hypothesis 5: Stress-focused WSN coworker interactions will present themselves as moderators that weaken the positive relation between the intensity of WSN and *emotional* and *instrumental* support.

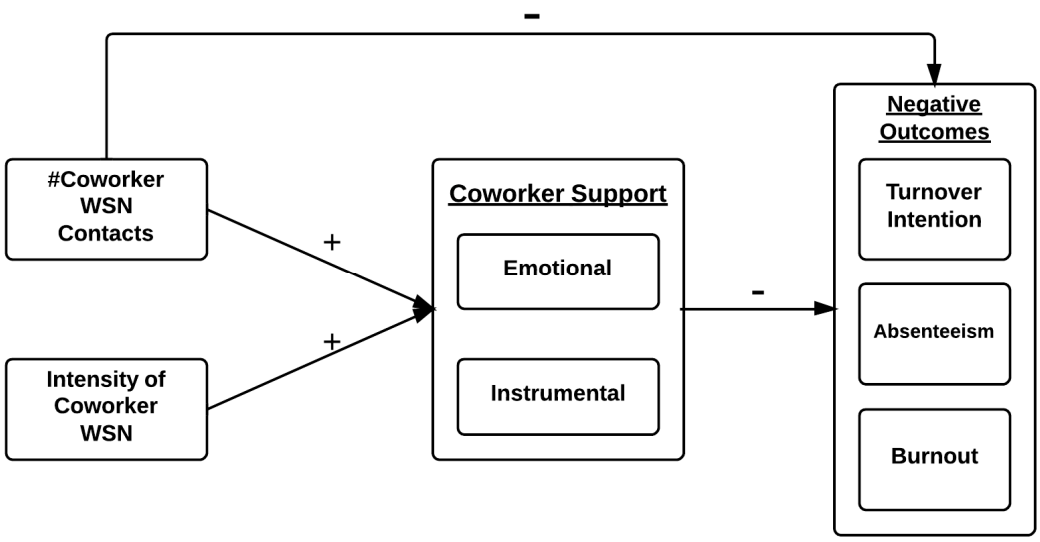

Figure 2. This graphic display shows the conceptual model of Hypotheses 3 and 4.

Method

Participants

A total of 263 full-time employed (i.e., at least 40 hours per week) participants were recruited online from Amazon Mechanical Turk (www.mturk.com). Mechanical Turk is a division of Amazon.com that hosts user-submitted tasks (called Human Intelligence Tasks, or HITs) to be completed by other users for a fee. HITs vary widely in their nature and level of required expertise. A few examples include translating a webpage into another language, rating the quality of a website, or ranking retail products. Users are usually paid a small fee for completing HITs but only after their work has been examined and found to be satisfactory. In the event that the work is unsatisfactory, it is rejected and no payment is made. Users are motivated to perform their best because rejected HITs count against one's profile rating and can lead to not being allowed to perform future HITs.

The sample was restricted to full-time employed individuals who regularly use a computer with Internet access. Recent data from the Pew Research Center indicated that, whereas individuals over the age of 65 are the fastest growing group of WSN users, the use of social networking sites is still skewed toward the younger (Zickuhr & Smith, 2012). Therefore, age was collected to test for sub-group differences. Gender was also collected to test for moderating effects in the perceptions and values placed on coworker support that have been demonstrated previously (Beehr, Farmer, Glazer, Gudanowski, & Nair, 2003). Additional demographic data included participant occupational family (gathered from O*NET, an online standardized database of definitions and qualifications of thousands of occupations), job title, and at-work access to the WSN sites.

Procedure

IRB approval for the study was obtained and it was exempt from full review. Participants located the questionnaire on the Mechanical Turk website, which explained the nature of the study, provided instructions to participate, and contained a link to the hosting site for the questionnaire (Qualtrics.com). Similar to other HITS that involve completing questionnaires, each participant received $0.75. Average time to complete the survey was roughly seven minutes, which corresponds with Mechanical Turks' suggested hourly pay rate of $7. Informed consent to participate was collected electronically. The consent document provided an overview of the study, reminded participants of the study's inclusion criteria (full-time employed adults), and ensured the confidentiality and anonymity of responses. Consent was obtained by selecting "yes" to a question asking to participate at the bottom of the screen. After consenting to participate, the survey began.

The order of presentation for the items measuring constructs was randomized for each participant in an effort to prevent order effect biases. Upon completing all of the survey items, participants were transferred to a debriefing page that contained a more detailed description of the study and its perceived benefits. There was a perceived risk to participants that answering questions about negative aspects of their job may elicit new or magnify existing psychopathologies. In order to address this concern, the debriefing page contained links to several Internet resources containing advice that have been clinically demonstrated to prevent and reduce the negative effects of the various forms of job strain. Contact information for the researcher was provided in order to answer any questions or address concerns. In order to verify participation, a random number generator produced a unique set of characters to be submitted into a text box on the Mechanical Turk page for

the study. Participation was verified by matching the randomly generated numbers from the survey-hosting site, Qualtrics, with the participant provided response on Mechanical Turk; payments were distributed within seven days of completion.

Measures

Coworker support. *Emotional and instrumental coworker support* was measured with ten items developed by Ducharme and Martin (2000). Five items measure each subscale using 5-point Likert scale for which higher numbers represent more coworker support. Responses range from "disagree strongly," "disagree," "neither agree or disagree," "agree," and "agree strongly." An example item for emotional support is, "your coworkers really care about you," and an instrumental support example is, "your coworkers give useful advice on job problems." The measure was originally developed for a wide variety of job types therefore aligning it with the scope of the current study. Cronbach's alpha reliability score from the Ducharme and Martin study was 0.78. An additional study that used this measure of coworker support reported a Cronbach's alpha score of 0.87 (Rousseau & Aube, 2010). This study also reported that these two forms of coworker support have an additive effect on increasing the level or affective commitment to one's organization.

Stress-focused WSN coworker interactions. Beehr et al. (2010) used two items to measure *stress-focused coworker interactions*. Confirmatory factor analysis was used to test the structure of their three-construct (stress-focus, inadequacy, and unwanted support) model, resulting in fit indices above standard recommended parameters (Tabachnik & Fidell, 2007). These items have been adapted to reflect coworker WSN interactions and are "when I interact with coworkers online, I cannot help but think about

how stressful my job is" and "interacting with coworkers online reminds me of how bad things can sometimes get at work." Items are measured on a 7-point Likert-type scale with the anchors ranging from 1 ("strongly disagree") to 7 ("strongly agree").

Negative worker outcomes. Burnout was measured with the *Maslach Burnout Inventory – General Survey (MBI – GS)* with the three subscales *exhaustion*, *cynicism*, and *professional efficacy* developed by Schaufeli, Leiter, Maslach, and Jackson (1996). *Turnover Intention* was measured with three items from Chen, Hui, and Sego (1998). Effort reduction was measured from the two subscales *job neglect* and *shirking* from the aggregate measure of effort reduction developed in Kidwell and Robie (2003).

Burnout. The original Maslach and Jackson (1981) measure of burnout has been regarded as the gold standard for assessing the prevalence of the syndrome by many researchers. Indeed, the original Maslach and Jackson article has been cited over 5,000 times (per GoogleScholar). Yet, the generalization of the measure has been questioned and found to be unreliable and invalid outside of employment populations with a predominant focus on human service (i.e., those directly involved in the care of others or their behavior such as doctors, social workers and prison guards) (Pines & Aronson, 1988). In response to this limitation, the measure has been adapted to a more general employed participant population (MBI – GS, Shaufeli, et al., 1996). Results from a multi-national, large sample size validation study determined the three-factor structure (*exhaustion*, *cynicism*, and *professional efficacy*) to be superior to the original inventory in measuring the syndrome in general employee populations, as well as those in the human services sector (Schutte, Toppinen, Kalimo, & Schaufeli, 2000). Pertinent to the current study, the MBI – GS has also been validated for use in Internet data collection

studies (Bakker, Demerouti, & Schaufeli, 2002). The MBI – GS subscale, Exhaustion, has five items (e.g., “I feel used up at the end of the workday”). Cynicism also has five items (e.g., “I have become less enthusiastic about my work") and Professional Efficacy has six items (e.g., “In my opinion, I am good at my job"). The item responses are anchored with 7-point Likert-type scaled responses ranging from 0 (“never”) to 6 (“always”). The MBI-GS was scored by computing mean scores of the responses for each dimension.

Turnover intention. The three items used to measure turnover intention have been used in a variety of contexts and reported as valid and reliable (Chen, et al., 1998, $\alpha = .78$; Valentine, Godkin, Fleischman, & Kidwell, 2011, $\alpha = .82$). The three items are ‘‘I often think of leaving the organization,’’ “It is very possible that I will look for a new job next year,’’ and ‘‘If I may choose again, I will choose to work for the current organization.’’ Item responses were anchored on a 7-point Likert-type scale ranging from 0 (“strongly disagree”) and 6 (“strongly agree”). This measure was scored by computing mean scores of the responses.

Effort reduction. Chiaburu and Harrison’s (2008) meta-analysis identified effort reduction as one of the negative outcomes associated with lower emotional and instrumental coworker support. Two dimensions of effort reduction relevant to the current study are Job Neglect and Shirking (Kidwell & Robie, 2003). Job Neglect has been defined as “the tendency to passively allow job conditions at work to deteriorate through reduced interest, effort, chronic lateness or absenteeism, or the use of company time for personal use” (Leck & Saunders, 1992). The construct has been generally regarded as a passive, destructive byproduct of moderate to severe job dissatisfaction

(Leck & Saunders, 1992). Shirking has been defined as, “the tendency for workers to give less than full effort on the job” (Albanese & Van Fleet, 1985) and relates to job satisfaction and counterproductive work behaviors (Judge & Chandler, 1996). These two constructs are very similar and may refer to the same pattern of behaviors. This similarity is reflected by one study combining job neglect and shirking into a single construct named, *withholding effort*, which was supported through confirmatory factor analysis (Kidwell & Valentine, 2009). Due to the close conceptual proximity of shirking and job neglect, and empirical research to support their likeness, data collected from these items were analyzed as one construct. The Kidwell and Robie (2003) study on effort reduction also examined Free Riding and Social Loafing, yet those constructs imply working conditions that explicitly include teamwork. In an effort to generalize the findings of the current research, the sample was not restricted to workers who participate in work involving teams, and those dimensions of effort reduction will not be included. Five items were used to measure Job Neglect and two items will measure Shirking. The items are 5-point Likert scaled with responses ranging from 1 (“never”) to 5 (“very frequently”). An example of a Job Neglect item is, “I take more and longer breaks than I should” and a Shirking item example is, “I give less than 100 percent effort at my job”. Cronbach’s Alpha reliability scores have been reported as 0.77 for Job Neglect and 0.68 for Shirking (Kidwell & Robie, 2003). This measure was scored by computing mean scores of the responses for each dimension.

Intensity of WSN and Coworker WSN Contacts. The Facebook Intensity Scale was created by Ellison et al. (2007) in order to obtain a broader measure of Facebook use than frequency or duration indices. The measure includes two self-reported assessments of

Facebook behavior, designed to measure the extent to which the participant is actively engaged in Facebook activities (e.g., the number of Facebook ‘‘friends’’ and the amount of time spent on Facebook on a typical day). Additional items were created for the current study to reflect these measurements on the sites Twitter and Linkedin. The WSN coworker ratio was calculated by dividing the number of Facebook, Twitter, or Linkedin WSN coworker contacts (measured separately) by “the number of coworkers you interact with on a regular month.” Interactions with coworkers were defined to participants as email, instant message, telephone, or face-to-face. This method of measuring the number of WSN coworker contacts, in lieu of simply using the raw number of WSN coworker contacts, was an attempt to equalize the variation in the number of coworkers across participants.

This measure also includes a series of Likert-scaled attitudinal questions designed to gauge the extent to which the participant is emotionally connected to Facebook and the extent to which Facebook is integrated into his or her daily activities. Yet, the main focus of the current research was the perceived value of the WSN coworker relationships, not the sites themselves. In order to account for this shift of focus, the original items were re-written or omitted to reflect the value participants place on their Facebook, Twitter, and Linkedin coworker relationships. Examples of new items to measure the value of a worker’s WSN relationships are, “Being Facebook friends with coworkers has positively affected our relationship” and “I feel that my interactions with coworkers on Facebook have provided me with a greater sense of community within my organization.” Items were also created to reflect these perceptions regarding Twitter and Linkedin. A search of the literature database determined that the use or adaptation of the original Facebook

Intensity Scale has not been published. The attitudinal items are Likert-scaled and range from 1 (“strongly disagree”) to 5 (“strongly agree”). Cronbach’s Alpha scores for the original measure were reported by Ellison et al. (2007) as 0.82. This measure was scored by computing mean scores of the responses.

Results

Missing Data and Outliers

A total of 263 original cases were collected and less than 5% of the data were missing; eight cases were removed listwise. An additional seven cases were removed due to their job titles not complying with the scope of the study (e.g., server, massage therapist) or having invalid responses (i.e., answering “yes” for an item that asked for a numerical response). Mahalanobis distances were calculated for the number of Facebook coworker “friends, Twitter coworker “followers,” and Linkedin coworkers “connections”. Treating the removal of outliers conservatively, 10 cases were removed as outliers due to having Mahalanobis distance values over 15. The final sample size for the study was 238.

Demographic Results and Subgroup Analyses

The mean age of participants was 33.4 (*SD* = 10.01, range: 20-68 years) and the sample was 58.4% male gender identifying. Seventy-eight percent of the respondents reported that their employer allows access to web-based social networking websites. Of the 23 possible O* NET job families the top three represented groups were *education, training, and library business* (*N* = 32, 13.8%), *business and financial operations* (*N* = 31, 13.4%), and *computer and mathematical* (*N* = 29, 12.5%); (see Table 1). Subgroup gender differences were tested because perceived differences in coworker support have been previously demonstrated (Beehr, et al., 2003). For men, the mean emotional

coworker support was 3.87 (*SD* = .52) and the instrumental support mean was 3.94 (*SD* = .44). Women's mean score for emotional coworker support was 3.89 (*SD* = .59) and 3.99 (*SD* = .42). These observed differences were tested with Independent Samples t-Tests, which were non-significant, therefore no additional analyses to investigate for subgroup differences based on gender were conducted. To test for the effects of age as a moderator, interaction variables were computed for Age X Emotional Coworker Support, Age X Instrumental Coworker Support, and Age X Stressful Coworker Interactions. These variables were entered into a structural equation model as predictors of the outcome variables (turnover intentions, effort reduction, performance efficacy, exhaustion, and cynicism), along with emotional and instrumental coworker support and stressful coworker interactions as additional predictors. This model did not meet conventional standards for statistical fit indices (adjusted goodness of fit, comparative fit, and root mean square of approximation), nor were any of the path estimates of the interaction terms significant at the $p < .05$ level.

Table 1
*O*NET Job Families Frequencies and Percentages of the Current Sample* (*N = 238)*

Job Family	*N*	*%*
Architecture and Engineering	10	4.2
Arts, Design, Entertainment, Sports, and Media	17	7.1
Building and Grounds Cleaning and Maintenance	0	0.0
Business and Financial Operations	28	11.8
Community and Social Service	4	1.7
Computer and Mathematical	31	13.0
Construction and Extraction	2	0.8
Education, Training, and Library	31	13.0
Farming, Fishing, and Forestry	3	1.3
Food Preparation and Serving Related	3	1.7
Healthcare Practitioners and Technical	4	1.7

Healthcare Support	17	7.1
Installation, Maintenance, and Repair	5	2.1
Legal	3	1.3
Life, Physical, and Social Science	7	2.9
Management	21	8.8
Military Specific	0	0.0
Office and Administrative Support	20	8.4
Personal Care and Service	1	0.4
Production	4	1.7
Protective Service	3	1.3
Sales and Related	22	9.2
Transportation and Material Moving	1	0.4

Descriptive Statistics, Bivariate Correlations, and Reliability Statistics

Means, standard deviations, and correlations among the variables are presented in Table 2. A criterion of $p < .01$ was used as the significance criteria due to the larger sample size. Noted patterns in the correlations are several significant correlations among Facebook Intensity and the outcome variables, yet few for Twitter and LI intensity. Emotional and instrumental support was significantly related with several variables, yet the effects were larger in emotional, which has been reported in other studies (Ducharme & Martin, 2000). The highest observed inter-construct correlations were among the burnout subscales and turnover intentions and effort reduction (three of which were above $r = .50$). Cronbach's alpha scores (see Table 3) for the variables were all above 0.70, with the exception of instrumental coworker support ($\alpha = 0.67$).

Table 2

Means, Standard Deviations, and Correlations (N = 238)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	33.44	10.06	–															
2. Gender	1.44	0.50	0.05	–														
3. Emotional Support	3.87	0.54	0.11	0.04	–													
4. Instrumental Support	3.95	0.43	0.12	0.07	0.47*	–												
5. Stressful Online Interactions	2.50	1.03	-0.03	0.02	-0.05	-0.15*	–											
6. Exhaustion	3.78	1.49	-0.26*	0.07	-0.20*	-0.14*	0.17*	–										
7. Performance Expectancy	5.43	1.09	-0.31*	-0.01	-0.32*	-0.16*	0.13	0.78*	–									
8. Cynicism	3.36	1.50	0.29*	0.09	0.24*	0.28*	-0.18*	-0.11	-0.32*	–								
9. Turnover Intentions	2.54	0.97	-0.19*	-0.01	-0.32*	-0.28*	0.24*	0.55*	0.60*	-0.28*	–							
10. Effort Reduction	2.04	0.72	-0.18*	0.04	-0.19*	-0.19*	0.24*	0.44*	0.55*	-0.41*	0.44*	–						
11. Facebook Intensity	3.64	1.09	0.04	-0.04	0.22*	0.15*	0.04	-0.19*	-0.18*	-0.03	-0.15*	-0.19*	–					
12. Twitter Intensity	3.75	1.48	0.11	0.09	0.12	0.10	0.01	-0.05	-0.07	-0.05	-0.07	-0.13*	0.58*	–				
13. LinkedIn Intensity	3.83	1.37	0.02	0.05	0.22*	0.10	0.04	-0.02	-0.04	-0.01	-0.02	-0.13*	0.49*	0.66*	–			
14. Facebook Coworker Ratio	0.59	0.86	-0.15*	-0.11	0.06	-0.06	0.22**	-0.08	-0.09	-0.07	-0.07	-0.01	0.13*	0.02	0.03	_		
15. Twitter Coworker Ratio	0.23	0.65	-0.11	-0.10	-0.05	0.03	0.11	-0.10	-0.00	-0.07	-0.13	-0.06	0.05	-0.02	-0.04	0.29**	_	
16. Linkedin Coworker Ratio	0.25	0.43	-0.11	-0.14*	-0.08	-0.20**	-0.03	-0.08	0.04	-0.03	0.05	0.02	0.03	0.07	-0.03	0.20**	0.14*	_

*$p < .01$

Table 3
Cronbach's Alpha Scores (N = 238)

Variable	α
1. Emotional Support	0.83
2. Instrumental Support	0.67
3. Exhaustion	0.89
4. Performance Expectancy	0.80
5. Cynicism	0.85
6. Turnover Intentions	0.80
7. Effort Reduction	0.85
8. Facebook Intensity	0.87
9. Twitter Intensity	0.94
10. LinkedIn Intensity	0.93

Results of the Hypotheses

Structural equation modeling with AMOS version 21.0.0 was used to test the hypotheses. For the models, Maximum Likelihood Estimation was used and structural fit of the models was reported with Chi Square tests, Comparative Fit Index (CFI), and Root Mean Square of Error Approximation (RMSEA). CFI and RMSEA are preferred to other fit indices (e.g., goodness of fit index) due to their insensitivity to sample size (Fan, Thompson, & Wang, 1999). The cut-off criterion for CFI to indicate good fit of a model used was 0.90 and 0.08 for RMSEA (Hu & Bentler, 1999).

During the process of analyzing the data a Heywood case was discovered. Although theoretically impossible, yet not uncommon in SEM or factor analysis, a Heywood case represents a variable with an out of possible range positive or negative variance (Heywood, 1931). The Heywood case in the current results was a negative error term for the burnout dimension, cynicism. This anomaly was produced in several of the models

tested. The cause of a Heywood case can be the result of low sample sizes, and/or poor reliability scores for the latent variable (Gagne & Hancock, 2006).

The sample size for the current study was adequate according to SEM sample size conventions (Westland, 2010), and reliability for this variable assessed with Cronbach's alpha was 0.89. Whatever the cause of this anomaly, it is intriguing because the MBI-GS has been reported as reliable and valid in many contexts, languages, and cultures (Schutte et al., 2000). The consequence of this outcome is that the SEM results in their initial state are invalid or improper. There is no agreed upon standard treatment and correction of this improper solution, yet research literature on the subject does offer options. Perhaps the most discussed, yet not highly regarded, is to set the out of bounds negative variance to zero or a low positive value such as 0.01 or 0.05 (Chen et al., 2001). Another option is to investigate the path estimates of the computed improper solutions and remove the path(s) with extreme or out of range values. The latter of these two methods to generate a proper or valid solution requires an inference to be made about which path may be responsible for generating the negative variance, as well eliminates a path from the model that was added based on theoretical development of the current study. Therefore, setting the variance to a low positive value was the first attempted method to create a tenable model, and if the model was still improper, an offending identified path was deleted. The specific treatment of the Heywood case is discussed in the results section for each hypothesis.

Hypothesis 1. Stress-focused coworker WSN interactions were predicted to be positively related to the negative worker outcomes: turnover intentions, effort reduction, and burnout. This model did not produce a Heywood case. The SEM depicted in Figure 3 (see Appendix) contains the standardized coefficients for the relations predicted in this

hypothesis, and the data support this hypothesis (i.e., each of the five hypothesized relations were significant to the $p < .05$ level). The fit statistics for this model indicated that it approached adequate fit. The model had a significant chi-square ($\chi^2 = 679.95$, $p < 0.001$), a CFI slightly below the 0.90 convention for adequate fit (0.88) and an adequate RMSEA (0.07).

Hypothesis 2. This hypothesis had two parts, in the first, coworker support measured through the subscales, emotional and instrumental, was predicted to negatively relate to the outcomes turnover intentions, effort reduction, and burnout. The SEM depicted in Figure 4 (see Appendix) contains the standardized coefficients for this portion of the hypothesis. The Heywood case (the negative error term for the burnout dimension, cynicism) for this model was treated the same as in the first hypothesis by setting the variance of the variable to 0.01. Of the 10 depicted relations among the coworker support dimensions and outcomes, none were significant at the $p < 0.05$ level. The fit statistics for this model were mixed, with some indicating inadequate fit and others indicating adequate fit. The model had a significant chi-square ($\chi^2 = 1142.62$ $p < 0.001$), a CFI below the convention of 0.90 (0.85) and an adequate RMSEA (0.07).

The second portion of this hypothesis predicted a moderating influence of stress-based WSN coworker interaction on the formerly described coworker support – worker outcome relations. Two interaction terms were computed, one for each form of coworker support. These terms were incorporated into a separate SEM for each form of coworker support (see Figures 5 and 6 in Appendix).

Results for the model that tested the emotional coworker support/stressful online coworker communication were mixed. The Heywood case for this model was treated by

setting the variance of the cynicism error term to 0.01. Overall, the model had a significant chi-square ($\chi^2 = 1255.88$, $p < 0.001$) along with a low CFI (0.84), yet the RMSEA score represented adequate fit (0.07). Path estimates for the model indicate one significant iteraction effect of stressfull online coworker communications between emotional support and the burnout subscale, exhaustion ($\beta = -0.97$, $p = 0.04$); (see Figure 5 in Appendix for the standardized estimates for this model).

The instrumental coworker support/stressful online coworker communications model did not support rejecting the null hypothesis. The Heywood case for this model was treated by setting the variance of the cynicism error term to 0.01. The model had a significant chi-square ($\chi^2 = 1185.96$, $p < 0.001$) as well as a low CFI (0.83) and an adequate RMSEA (0.07). None of the five hypothesized moderated relations among instrumental coworker support and the outcome variables were significant at the $p < 0.05$ level (see Figure 6 in Appendix for the standardized estimates for this model).

Hypothesis 3. This hypothesis addressed the direct effect of the number of coworker contacts on social networking sites on coworker support and the work outcome variables. The first part of this hypothesis concerned coworker support in its two dimensions, emotional and instrumental. The second portion of this hypothesis addressed the effect of coworker social networking contacts on the worker outcomes turnover intentions, effort reduction, and burnout. Three structural equation models were constructed to test the unique effects of Facebook coworker “friends”, Twitter coworker “followers” or coworkers “followed”, and Linkedin coworker “connections”. SEM fit statistics were mixed for each of these models, and partial support was detected for this hypothesis when examining the individual path estimates.

For the Facebook model the Heywood case did not emerge. Results for part 1 and part 2 of this hypothesis for the Facebook model were not significant at the $p < .05$ level (see Figure 7 in Appendix for the standardized estimates for this model). The CFI for this model indicated poor fit (0.82) and the chi-square was significant ($\chi^2 = 1483.62$, $p < 0.001$), however the RMESA was below the covention of 0.08 (RMSEA = 0.07).

The model testing the effect of Twitter coworker "followers" or coworkers "followed" did generate a Heywood case in the cynicism error term. The first and preffered tactic of setting the variance of this variable of a small positive number (0.01) yielded a model that did not converge by reaching an iteration limit of 50. Therefore, the regression weights were examined for any out of range values. The standardized path between instrumental coworker support and cynism was -1.34, so this path was removed and a subsequent analysis of the data was conducted. This model was successful and converged in 13 iterations. Results indicate partial support for this both sections of this hypothesis. Of the seven predicted relations (two for the cowoker subscales and five for the outcome variables), four supported the hypothesis and were significant to the $p < 0.05$ level. Negative significant relations were detected between Twitter coworker contacts and turnover intentions ($\beta = -0.25$, $p = 0.002$), effor reduction ($\beta = -0.16$, $p = 0.037$), the burnout subscale of exhaustion ($\beta = -0.22$, $p = 0.008$), and Twitter coworker contacts and the burnout subscale of cynicism ($\beta = -0.22$, $p = 0.014$) (see Figure 8 in Appendix for each of the standardized estimates for this model). The CFI for this model indicated poor fit (0.79) and the chi-square was significant ($\chi^2 = 1653.50$, $p < 0.001$), however the RMESA was below the covention of 0.08 (RMSEA = 0.07).

The Linkedin model for hypothesis three also generated a Heywood case for the cynicism error term. Similar to the model testing the effect of Twitter use with coworkers, setting the variance of the term to a small positive number did not produce a model that would reach convergence before 50 iterations. After reviewing the regression weights, the same path, instrumental coworker support to cynicism, was the largest standardized value which also had an unusually large standardized value (-2.19). Removing this path produced a successful model that converged on its twelfth iteration. Of the seven predicted relations (two for the cowoker subscales and five for the outcome variables), four supported the hypothesis and were significant at at the $p < 0.05$ level. The significant relations were between LI coworker connections and instrumental coworker support ($\beta = -0.21$, $p = 0.005$), exhaustion ($\beta = -0.22$, $p = 0.013$), performance efficacy ($\beta = 0.15$, $p = 0.039$), and cynicism ($\beta = -0.22$, $p = 0.018$) (see Figure 9 in Appendix for each of the standardized estimates for this model). The CFI for this model indicated poor fit (0.79) and the chi-square was significant ($\chi^2 = 1634.32$, $p < 0.001$), however the RMESA was below the covention of 0.08 (RMSEA = 0.07).

Hypothesis 4. This hypothesis predicted that coworker Facebook, Twitter, and LI intensity, the qualitative measure of WSN activity with one's coworkers, would positively relate to emotional and instrumental coworker support. This hypothesis was tested as part of the models constructed for the third hypothesis (see Figures 7-9 in Appendix), and the results were mixed with four of the predicted seven relations supporting the hypothesis as significant to the $p < 0.05$ level. For Facebook Intensity, there was a positive relation between Facebook intensity and emotional coworker support ($\beta = 0.263$, $p < 0.001$). The Twitter subset of analyses for this hypotehsis indicated

significant results between Twitter intensity and instrumental coworker support ($\beta = 0.15$, $p = 0.04$). LI results indicated two significant results between LI intensity and the coworker support dimensions (emotional, $\beta = 0.23$, $p = 0.01$; instrumental, $\beta = 0.15$, $p = 0.04$).

Hypothesis 5. For this hypothesis, stress-focused online WSN interactions were predicted to moderate the relation between coworker WSN intensity and emotional and instrumental coworker support. Three models (one for each WSN website) were constructed to test this hypothesis (see Figures 10-12 in Appendix). The models used to test this hypothesis represented adequate fit, yet only one of the hypothesized six individual path estimates of the interaction variables was significant to the $p < 0.05$ level.

The model for the Facebook portion of this hypothesis had a significant chi-square value ($\chi^2 = 247.25$, $p < 0.001$), yet other fit statistics for this model were within acceptable value ranges (CFI = 0.91, RMSEA = 0.08). The path estimates for this model produced significant relations between Facebook value and both of the coworker support subscales. The Facebook value/stressfull WSN communication interaction variable was significant for the emotional coworker support dimension ($p < 0.001$), yet insignificant for instrumental coworker support (see Figure 10 in Appendix for the standardized values of these estimates). Therefore, one of the two hypotehsized moderated relations supported the hypothesis.

Similar to the Facebook model, the Twitter section of this hypothesis had a significant chi-square value ($\chi^2 = 253.23$, $p < 0.001$) and acceptable CFI (0.92) and RMSEA (0.08). Twitter value was significantly related to instrumental coworker support yet not emotional. The interaction term for this model did not significantly relate to either form

of coworker support, thus not supporting the hypothesis (see Figure 11 in Appendix for the standardized values of these estimates).

The chi-square for the LI model was significant ($\chi^2 = 213.55$, $p < 0.001$), yet additional fit statistics for the LI model were acceptable (CFI = 0.94, RMSEA = 0.07). Examining the path estimates for this model indicates significant relations between LI value and the coworker support subscales, yet nonsignificant relations between the LI value/stressful WSN communication interaction variable, this not supporting the hypothesis (see Figure 12 in Appendix for the standardized values of these estimates).

Therefore, only one of the nine hypothesized relations moderated effects of stressful coworker online communication on the relations between WSN coworker value and coworker support.

Discussion

Membership and use of social networking sites permeates all age groups, ethnicities, and levels of socio-economic status, and much is to be learned about how their use affects workers. This study contributes to the understanding of how these websites may strengthen one's workplace relationships to generate coworker support. It also examined how the use of these sites affect worker outcomes that contribute to organizational costs (absenteeism, turnover, and burnout). Partial support for the hypotheses was observed.

Beehr, et al. (2010) refocused the research on coworker support by examining coworker interactions that, while intended as beneficial, are actually detrimental and increase job strain. In their study, one form of coworker social interactions they studied was those that highlighted the stressful aspects of one's work life. The results from the test of the first hypothesis in current study broadened this research by extending it to

online, rather than face-to-face, stress-focused coworker interactions. The current contribution is also novel by relating these interactions to outcomes that are well-researched and valued by organizations (e.g., burnout). The empirical support of these hypotheses suggests that employees may wish to avoid social interactions with coworkers who tend to highlight the stressful aspects of their work, despite the platform in which these interactions occur.

Although the SEM that tested the first part of the second hypothesis did not detect any significant relations between the two forms of coworker support and the worker outcomes, the bivariate correlations computed at the dimension level, rather than at the item level in the SEM, supported this hypothesis. This result is less novel and more a replication of other research (Chiaburu & Harrison, 2008; Ng & Sorensen, 2008; Viswesvaran et al., 1999), yet it establishes a foundation for the second portions of this hypothesis. The second part of this hypothesis examined the role of the moderated effect of stress-focused online interactions on the proposed relations between coworker support and the workplace outcomes. Two separate models, one for each form of coworker support were tested and neither met conventions for adequate statistical fit. From a statistical standpoint, explanation for the lack of support may stem from the low (often $r < 0.25$, although significant), correlational values observed in the bivariate analyses between coworker support and the worker outcomes. That is, these significant effects are too small to produce similar results with SEM techniques. These results are not discouraging, however, in that the effects of coworker support have often been reported as small, yet significant (Chiaburu & Harrison, 2008). In the current study, even when

attempting to control for the negative influence of stress-based coworker online social interactions, the effects of coworker support on the workplace outcomes were minimal.

The depth of participant involvement in social networking sites with coworkers was measured quantitatively through the fraction of the number of coworker social networking site contacts divided by the total number of active (i.e., having any form of at-work interaction during an average month) coworkers. The hypothesis stating that this measure would be related to coworker support was not supported in its SEM for any of the independently assessed social networking sites, Facebook, Twitter, or Linkedin with the exception of LI coworker connections relating to instrumental support. Instrumental coworker support is assistance completing one's job tasks and responsibilities, and LI is strictly used for business-related networking. This result aligns with other research that reported different predictors of instrumental versus emotional coworker support (Chiaburu & Harrison, 2008). Therefore, it is encouraging that the current study indicates that having more coworkers as LI connections may provide an advantage in gathering additional resources needed to achieve job success.

Depth of involvement with coworkers on social networking sites was also assessed qualitatively through a construct named WSN intensity. The SEM results testing for the hypothesized relations between this metric and coworker support were similar to those for the quantitative variable in that little significant relations were detected across the three social networking sites. However, increased Facebook intensity was strongly related (p <.001) to the emotional form of coworker support. This result is in agreement with prior studies where college students who used Facebook more were also those who reported greater numbers of deeper and stronger relationships (Ellison et al., 2007;

Steinfield et al., 2008). Unlike LI, which is strictly business-like in nature, Facebook is dominantly non-work related social content. Therefore, it is reasonable that individuals who highly value their mostly social relationships with coworkers on Facebook will also report greater amounts of emotional coworker support.

The last hypothesis of this study tested for a moderation of stress-focused online coworker interactions on the relation between WSN intensity and coworker support. As before, each social networking site was tested individually. The only significant moderated effect observed was on Facebook and emotional support ($p < .001$). That is, when online interactions with coworkers on Facebook reminded individuals of how stressful their jobs can be, they counteracted the potential benefits observed from other Facebook interactions on emotional coworker support. This result is similar to that reported by Beehr, et al. (2010) where these forms of social interactions increased job strain. Along with the other results in the current study on the same topic, these contribute new understanding on how well-intentioned coworker social interactions efforts can be destructive if they result in highlighting the negative aspects of one's work life.

Although efforts were made in the current study to maintain scientific rigor in its design and analysis of data, its results are not without limitations. Cross-sectional designs are well-fitted for initial or early stages of research on a subject matter that is emerging. They demand fewer resources than more extensive design types such as time series or longitudinal, yet they lack a strong ability to apply their results causally. Future research on the effects of social networking site use on workers could consider the results of the current study to justify the efforts required for more in-depth study designs. Also, the

sample used to collect the data represented a wide variety of job types (per demographic data collected on O*Net job families). A benefit of this is perhaps an increase in generalizability, yet there may be job families or sub-families where stronger or weaker effects pertaining to the current hypotheses are observed. The data were also collected online in which the limitations of this have been previously identified (Granell & Wheaton, 2004). However, studies reporting data collected from Amazon's Mechanical Turk service were recently reviewed and it was determined that their samples represent a relatively diverse population and the data were equally reliable to those collected in traditional methods (Buhrmester, Kwang, & Gosling, 2011).

Conclusions

Study 1 provided evidence that connecting with one's coworkers on social networking websites may lead to increases in both instrumental and emotional coworker support. However, when these interactions cause workers to focus on the stressful aspects of their jobs, they may result in less coworker support and more in harmful outcomes such as turnover intentions, burnout, and effort reduction.

Study Two

The Effect of Web-based Social Networking on Social Capital and Career Success

The concept of social capital has been used broadly in a variety of disciplines to represent what is essentially a commodity generated from one's social networks. Many definitions and measurements of the construct exist and can be divided between those that maintain a group or individual perspective. For example, sociologists and political scientists have used the term to reflect the strength and collective efficiency from social capital generated from the cohesiveness of a group (Jackman & Miller, 1998; Putnam, 1993). Conversely, social capital from the individual perspective has been used to explain the resources derived from one's social networks for the purposes of emotional and psychological support (McKenzie, Whitley, & Weich, 2002) or social and economic success (Belliveau, O'Reilly, & Wade, 1996). The focus of the current study is how one's social network can affect aspects of career success. This study adds to the related body of literature by being the first to examine the role of social capital from the perspective of online social network relationships and interactions. The primary research question of this study addressed the degree to which those who use social networking websites have greater amounts of reported career success-related social resources than their non-using counterparts.

Background and History

Drawing from weak tie theory (Granovetter, 1973), structural holes theory (Burt, 1992), and social resource theory (Lin, 1999), Seibert, Kraimer, and Linden's (2001) contribution to the study of social capital provided a novel perspective on the role of

one's social networks on career success. In their study, the authors provided a review of the existing theories, highlighted the portions of them relevant to their own theory, and presented their theory in text and graphical format. Empirical evidence for the structural strength of their model of career success was presented as support.

Weak tie theory (Granovetter, 1973) posits that the shallow or weak social connections, rather than the stronger more intimate variety, are those that are more likely to provide an individual with unique and meaningful information and resources. The logic of this premise is that, although potentially useful, the information shared among one's closest peers or cliques is likely to be redundant due to the frequency and in-depth level of contact. Therefore, it is those individuals on the fringes of one's social web who act as links to novel sources of information and resources. Granovetter (1973) describes these individuals as social bridges who provide a unique form of social capital, simply referred to as "bonding" social capital. Siebert et al. (2001) focused on this form of social capital in their study and demonstrated support for its contributions to one's career success.

Structural holes theory (Burt, 1992) is similar to weak tie theory in its focus on the availability of unique information and resources, yet it differs by concentrating on the configuration rather than depth of one's social connections. In this theory of social capital, the *ego*, the individual in question, has connections with *alters*, who are the partners in ego's relationships. A structural hole in one's social network is the absence of a connection between two of the ego's alters, where the lack of contact between these individuals is predicted to be a source of unique information and resources. For example, if John knows Susan and Bill, but they do not know each other, then it is presumed that

they carry more potential benefit to John than if Susan and Bill knew each other. According to Burt's theory (1992) a greater number of structural holes leads to more visibility, bargaining power (by using the lack of communication between alters as leverage), and career opportunities for ego. Siebert et al. (2001) integrated Burt's theory into their own by predicting that the number of structural holes was positively related to social resources, which they define as "contacts in other functions and at higher organizational levels".

The third theory of social capital considered in the construction of the Siebert et al., (2001) model of career success is *social resource theory* (Lin, 1999). Although it relates to the two aforementioned conceptualizations in its contention that one's alters provide career advantages to the ego, it differs in that its primary focus is the nature and quality of the social resources embedded within the social network (rather than simply the quantity of weak-ties or structural holes). For example, the research by Lin (1999) demonstrated a positive relation between occupational prestige of contacted alters in a job search and the prestige of the job eventually secured by ego. Siebert et al. (2001) considered this perspective by making efforts to include the content or quality emphasis of Lin (1999) conceptualization alongside the structural emphasis of *weak tie* (Gravonetter, 1973) and *structural hole* (Burt, 1992) theory.

The model posited by Siebert et al. (2001) predicted that the two structural elements, weak ties and structural holes, would generate the two social resources: contacts in other functions and contacts at higher levels. Both of these resources were defined as past or current coworkers within the participants' current organization. They predicted that the effects of these resources would lead to more network benefits and subsequently, higher

outcomes associated with career success. Their model was supported in a large diverse sample of employed university alumni and has been frequently cited in the literature since publication.

The current study is similar to the model proposed by Siebert et al. (2001) in that it considers the role of quantity (measured by weak-ties; Granovetter, 1973) and quality (by measuring contacts in higher functions and other resources; Lin et al., 1981) of an individual's social network. However, it extends the Siebert et al. (2001) theory of career success by considering social resources that carry potential benefit, in addition to solely examining those that have been acted on. Possible benefits of online social networking site use to extend one's career success social resources were explored primarily through the website, Linkedin.com (LI). Although Linkedin.com is the principle focus of the current study due to its strictly professional function, Facebook.com and Twitter.com were included as secondary research interests.

Launched in 2003 with roughly 175 million current members, (Linkedin.com) Linkedin (LI) is a social networking website used for a variety of professional purposes. Users of the site are encouraged to create abbreviated resumes and establish "connections" with other members. Once a connection is established, users are allowed to send private messages and view each other's resumes; private messages can be sent only to one's connections and email accounts are never used. Connections are made via an "invite" format that requires users to indicate how they know someone before an invite is sent. Upon receiving an invite request, a user verifies the nature of the relationship with the other user. LI defines itself as strictly a professional website. Member profiles may contain only professionally related information like occupation and employer, but may

not list personal information like hobbies, interests, etc. The site also lacks social networking features of other sites like photo hosting or chat communications (e.g., Facebook). Given the professional nature of LI, it is presumed that the majority of connections the employee has would be classified as weak or loose ties (Granovetter, 1973). Pertinent to the current study, once a connection is made, a user can explore the connections of his or her connections, thus creating opportunities for extending one's professional social network. By becoming aware of one's connections' connections, an opportunity may exist for creating more loose-tie, bridging type relationships. For example, the existing connection may be a mechanism for an introduction to someone in the same field of work, thus extending one's bridging social capital. Another relevant feature of LI centers on its ability to maintain weak ties that may have been otherwise lost. For example, if someone establishes a connection with a coworker on LI and one person changes employer, LI provides a mechanism to stay in touch. This feature may be easier and simpler than forwarding and updating email lists.

The primary research question of the current study concerns the degree to which the use of LI may be superior for garnering and maintaining weak ties that may lead subsequently to more success in one's career. However, there may be social interactions on other social networking sites outside the capabilities of LI that could contribute to career success. The mostly social, as opposed to professional, purpose of Facebook may lead to creating or deepening relationships in a non-business context that could lead to resources to advance one's career. For example, getting to know a coworker better through Facebook may result in a greater chance to exchange valuable job information or act as a liaison to garner additional weak ties.

In an attempt to accurately investigate these research interests, a few research design concerns were addressed prior to collecting data. First is the matter of whether or not all LI connections would be considered weak ties. In the Seibert et al. (2001) study, participants were guided in their listing of alters with the following definition: "the people who have acted to help your career by speaking on your behalf, providing you with information, career opportunities, advice or psychological support or with whom you have regularly spoken regarding difficulties at work, alternative job opportunities or long term career goals." By interpretation, this characterization indicates that a weak tie has previously acted on ego's behalf, therefore failing to capture the career advancement potential derived from weak-tie relationships. This omission may be critical with respect to measuring the value of relationships on social media sites due to the likelihood of many LI connections or contacts in other functions on other sites carrying the under or non-utilized potential to positively affect an ego's career. For example, ego attends a professional conference and exchanges LI account information with several previously unknown alters and adds them as connections. The mutual understanding of this form of relationship is that a contact is created and maintained through LI, thus potentially generating social capital to be used to possibly further one's career, if needed. The Siebert et al. (2001) perspective fails to grasp this meaningful aspect of weak tie relationships, and it is argued that it be expanded. The current study defines weak ties as, "individuals who have previously acted or hold the potential to help one's career by speaking on his or her behalf, providing him or her with information, career opportunities, advice or psychological support or with whom one has regularly spoken

regarding difficulties at work, alternative job opportunities, or long-term career goals" (p. 225).

Despite efforts to prevent bias, it may be difficult to effectively control for such limitations. Regarding individual differences, people who are naturally more inclined to extend their social networks (e.g., highly extroverted, low neurotic) may represent a larger portion of those who are LI/Facebook/Twitter members than those who are not, thus creating an opportunity for type-one error. Personality does appear to affect engagement in social media websites, where extraversion has been demonstrated as being positively related to use in several contexts (Amichai-Hamburger & Vinitzky, 2010; Correa, Willard, & Gil de Zúñiga, 2010; Wehrli, S. 2008). One explanation for greater use of web-based social media by extroverts is known as "rich-get-richer." This interpretation posits that extroverted individuals use social media as a platform to enhance their natural tendencies (Ong et al., 2010). Controlling for extraversion between the LI and non-LI groups of the study could strengthen an argument that any detected differences between groups were not due simply to differences in personality. Additionally, research suggests that age plays a large role in distinguishing who uses social media sites and the different purposes it serves for different age groups (Skeels & Grudin, 2009). Therefore, this demographic point was also examined as a moderator.

The specific hypotheses tested in the second study were as follows:

Hypothesis 1: Individuals who use LI will report greater amounts of weak tie social capital resources than those who do not use LI.

Hypothesis 2: Individuals who use LI will report greater amounts of the social resources, contacts in other functions and contacts in higher functions, than those who do not use LI.

Hypothesis 3: Participants who use LI will report more contacts who could potentially contribute to the success of their careers than those who do not use LI.

Hypothesis 4: Participants who use LI will report more contacts who have actually assisted in their career success than those who do not use LI.

Hypothesis 5: When controlling for age and extraversion, the previous hypotheses will still be supported.

The following hypotheses are presented regarding the use of Facebook and Twitter.

Hypothesis 6: The LI user group will be more active on Facebook and Twitter than the non-LI group.

Hypothesis 7: Hypotheses 1-4 will still be supported after controlling for the frequency of use of Facebook and Twitter.

Method

Participants

Similar to Study 1, Amazon.com's Mechanical Turk service was used to recruit participants (see Study 1 for an explanation of this service). The sample was restricted to full-time (at least 40 hours per week on average) employed adults (18 years or older) who regularly use a computer with Internet access. Responses were collected from 309 participants. Deleting cases listwise removed 14 cases and an additional 17 were removed from analysis due to submitting job titles that did not reflect the inclusion criteria for the study (e.g., "cafeteria custodian"). The total final sample size was 278 (LI member sub-

group, N = 144; non-LI sub-group = 134). As previously mentioned, age and extraversion levels were collected, as recent data indicate these variables affect the use of WSN sites (Skeels & Grudin, 2009; Zickuhr & Smith, 2012). Additional demographic data included occupational family (gathered from O*NET, an online standardized database of definitions and qualifications of thousands of occupations), job title, gender, and at-work access to LI.

Measures and Procedures

Participants located the task on the Mechanical Turk website, which explained the nature of the study, provided instructions to participate, and contained a link to the hosting site for the questionnaire (Qualtrics.com). Relative to similar Human Intelligence Tasks (HITS) that involve completing questionnaires, each participant received $1. Informed consent to participate was collected electronically. The consent document provided more details of the study, reminded participants of the study's exclusion criteria (full-time employed adults), and ensured the confidentiality and anonymity of responses. Consent was obtained by selecting "yes" to a question asking to participate at the bottom of the screen. After consenting to participate, the next page contained the demographic items, the LI use items, and the extraversion items. The study was approved by the sponsoring university's IRB and determined to be exempt from full review.

Use of Linkedin. In addition to a binary yes/no item that measured whether or not a participant is a member of LI, a few items were used to provide a sense of the degree in which the site is used and how it is viewed by the respondent. These were measured by inquiring about the number of "connections" a LI user has, the number of times he or she accesses the site weekly, and three LI satisfaction items composed by the author ("I am

satisfied with Linkedin's ability to help me stay in touch with colleagues," "I feel that Linkedin being a member of Linkedin would help my chances of obtaining a job, if needed," and "Linkedin has been useful for broadening my circle of professional contacts"). Responses to these items were anchored with a 5-point Likert scale that ranged from "completely disagree" to "completely agree." These items were scored by computing the mean of the responses.

Facebook and Twitter Use. Participants from the LI and Non-LI groups were asked if they are members of Facebook and Twitter. Frequency of use of these sites was also measured. Facebook membership is very large, as well as frequently used (roughly a billion individuals who access the site monthly and 618 million who accessed the site daily in December 2012, Facebook.com). Twitter has a similarly large number of followers, with roughly 288 million active monthly users (Bennett, 2013). The use of these sites was measured with the item "Roughly, how often do you access Twitter on the average week? Responses to this item were recorded with Likert-scaled responses from 1-5 (1 = never, 2 = 1-5 times, 3 = 6-10 times, 4 = 11-15 times, and 5 = over 15 times).

Extraversion. A subscale from the NEO-PI-R (Costa & McCrae, 1992) was used to measure extraversion. This self-report survey is the third version of a five-factor model of personality measure developed by Costa and McCrae that has been revised over time to measure additional dimensions and improve reliability. The NEO-PI-R represents decades of personality research and theory has been validated in multiple languages (Ahn & Chae, 1997; Aluja, Garcia, Rossier, & Garcia, 2005). The extraversion dimension contains ten items and an example is "I feel comfortable around people." Participants was asked to respond how accurately the statements reflect themselves, and responses were

anchored with a 5-point Likert scale ranging from “very inaccurate” to “very accurate.” The extraversion dimension of the NEO-PI-R was scored by calculating mean of the responses where higher scores represent stronger perceived extraverted traits.

To measure weak ties, potential and acted on social resources, contacts at higher levels, and contacts in other functions, a procedure was used that is similar to the method used in the Siebert et al., (2001) study on social capital and career success. Participants were asked to list (by initials) individuals within or outside his or her organization who have previously or could potentially aid their career by speaking on their behalf, providing job relevant information, assistance with their job, job advice, alternative job opportunities, promotion possibilities, or any other types of information or assistance that may contribute to the success of their career. Secondly, participants denoted individuals from their list who have provided any of the aforementioned types of assistance in the past and/or those who could potentially provide these resources. Contacts at higher levels were noted for each person on the participant’s list and were defined as “individuals within or outside of one’s current organization who are at a higher organizational level e.g., an entry-level position versus a managerial position with direct reports.” The same method was used to indicate contacts in other functions and these were defined as “individuals with job titles that are not similar to the participants who may exist within or outside of one’s current organization e.g., someone in a marketing position who has a contact in a human resources position”.

Both of these social resources have been related previously to outcomes associated with career success (Siebert, Kraimer, & Linden, 2001). Lastly, participants were asked to select the level of closeness they have with the individuals on their list as either

"especially close," "less close," or "distant." Weak tie relationships were those for which the participant describes as either "less close" or "distant." Upon completing each exercise in the survey, participants were transferred to a debriefing page that contains a more detailed description of the study and its perceived benefits. Contact information for the researcher was provided in order to answer any questions or concerns. In order to verify participation, a random number generator produced a unique set of characters that were entered into a text box on the Mechanical Turk page for the study. Once participation was verified by matching the randomly generated numbers from the survey hosting site (Qualtrics.com) with the participant providing responses on Mechanical Turk, payments were distributed within seven days after completion.

Results

Power Analysis

A portion of the hypotheses involved testing for differences between the LI user and non-LI user groups. Therefore, an *a priori* power analysis with the software program, G* Power was used to determine the sample size for the two groups. With an effect size of 0.33, probability error of 0.05, and power (1 – β error of probability) of 0.80, the suggested size for each group was 149, making the total estimated sample size for the current study two 298.

Demographic Results

The mean age of participants was 32.5 (SD = 9.51, range: 18-68 years) and the sample was 60.3% male gender identifying. At-work access to web-based social networking websites at-was reported in 75.4% of the respondents. Of the 23 possible O* NET job families, the top three represented groups were *computer and mathematical*

education (N = 50, 17.9%), *training, and library business* (N = 32, 11.5%) *and financial operations* (N = 32, 11.5%) (see Table 4).

Table 4
*O*NET Job Families Frequencies and Percentages of the Current Sample (N = 278)*

Job Family	*N*	*%*
Architecture and Engineering	15	5.4
Arts, Design, Entertainment, Sports, and Media	13	4.7
Building and Grounds Cleaning and Maintenance	0	0.0
Business and Financial Operations	32	11.5
Community and Social Service	7	2.5
Computer and Mathematical	50	17.9
Construction and Extraction	4	1.4
Education, Training, and Library	32	11.5
Farming, Fishing, and Forestry	0	0.0
Food Preparation and Serving Related	0	0.0
Healthcare Practitioners and Technical	5	1.8
Healthcare Support	13	4.7
Installation, Maintenance, and Repair	8	2.9
Legal	7	2.5
Life, Physical, and Social Science	5	1.8
Management	22	7.9
Military Specific	3	1.1
Office and Administrative Support	21	7.6
Personal Care and Service	2	0.7
Production	8	2.9
Protective Service	1	0.4
Sales and Related	21	7.6
Transportation and Material Moving	5	1.8

Descriptive Statistics, Bivariate Correlations, and Reliability

Means, standard deviations, and bivariate correlations among the variables are presented in Table 5. The average network size was 9.1 (*SD* = 7.3, range = 1-25). The average potential career resource contacts was 5.5 (*SD* = 4.6, range = 0-25) and average

acted-on career resource contacts was 3.6 (*SD* = 4.6, range = 0-25). The average amount of weak-tie relationships was 5.3 (*SD* = 5.2, range 0-25), average number of contacts in higher levels was 3.7 (*SD* = 3.2, range 0-18), and the average amount of contacts in other functions was 3.7 (*SD* = 4.1, range 0-24). The mean extraversion score for the sample was 2.63 (*SD* = 0.76). Frequency of Facebook and Twitter use was measured weekly with Likert-scaled responses from 1-5 (1 = never, 2 = 1-5 times, 3 = 6-10 times, 4 = 11-15 times, and 5 = over 15 times). The average use of Facebook was 3.16 (*SD* = 1.46), which represents 6-10 times per week and the average use of Twitter was 2.01 (*SD* = 1.19) which represents 1-5 times. The Extraversion instrument's internal consistency was assessed with Cronbach's alpha, which produced a score of 0.85.

Table 5

Means, Standard Deviations, and Bivariate Correlations (N = 278)

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Network Size	9.11	7.24	–									
2. Potential Career Resource Relationships	5.53	4.61	0.78*	–								
3. Acted-on Career Resource Relationships	3.68	4.62	0.79*	0.23*	–							
4. Weak-tie Relationships	5.26	5.24	0.87*	0.60*	0.77*	–						
5. Contacts in Higher Functions	3.72	3.15	0.68*	0.61*	0.45*	0.58*	–					
6. Contacts in Other Functions	3.70	4.13	0.75*	0.55*	0.62*	0.69*	0.44*	–				
7. Extraversion	2.62	0.75	-0.12	-0.14	-0.05	0.02	-0.02	-0.07	–			
8. Twitter Use	2.01	1.19	0.07	0.04	-0.06	0.06	0.12	0.03	-0.10	–		
9. Facebook Use	3.16	1.46	0.04	-0.04	-0.02	-0.03	-0.06	0.03	-0.12	0.38*	–	
10. Age	32.5	9.51	-0.12	-0.08	-0.11	-0.12	-0.08	-0.06	0.01	-0.16*	0.13	–

* $p < .01$

Results of the Hypotheses

Summary. General linear model analyses (GLM) were used to compare the differences between the LI using and non-LI member groups. Additionally, extraversion and age were entered as covariates in the multiple analyses of covariance (MANOVAs) to represent Hypothesis 5 and the use of Facebook and Twitter as covariates to represent hypothesis 7. Age and extraverted personality traits have been previously identified as significant contributors to differences in the use of web-based social media and LI, specifically (Amichai-Hamburger & Vinitzky, 2010; Correa, et al., 2010; Skeels & Grudin, 2009; Wehrli, 2008). Box's test for homogeneity of variance was significant ($p < .001$), which implies a violation of the assumption of homogeneity of variance. However, this test has been criticized as overly sensitive and less relevant when sample sizes are similar and when the effect size from a MANOVA is large (Keselman, Rogan, Mendoza, Breen, 1980). Levene's test on the one-way ANOVAs tests for equality of error variance were significant for several variables at the $p < .05$ level (network size, $p = 0.039$; acted-on resources, $p = .001$; weak-ties, $p = 0.001$; contacts in other functions, $p = 0.001$; use of Twitter, $p = 0.034$). While the Levene's test is less sensitive than similar tests (e.g., Bartlett's test) and is preferred (Gastwirth, Gel, & Miao, 2009), comparing the inter-item covariance matrix for the two groups indicates very similar patterns of variance (see Table 6).

Table 6
Dimension Covariance Matrix for the Non-LI and LI subgroups

	Variable	1	2	3	4	5
Non-LI Group[a]	1. Potential Career Resource Relationships	19.30	3.58	11.09	7.59	8.46
	2. Acted-on Career Resource Relationships	3.58	17.91	14.03	7.63	8.45
	4. Weak-tie Relationships	11.09	14.02	19.37	9.53	9.52
	5. Contacts in Higher Functions	7.59	7.64	9.53	9.89	5.86
	6. Contacts in Other Functions	8.46	8.45	9.52	5.85	13.46
LI Group[b]	1. Potential Career Resource Relationships	21.64	5.01	16.14	9.19	11.58
	2. Acted-on Career Resource Relationships	5.01	24.26	22.27	4.80	14.85
	4. Weak-tie Relationships	16.14	22.27	34.08	8.64	19.83
	5. Contacts in Higher Functions	9.20	4.80	8.63	9.50	5.09
	6. Contacts in Other Functions	11.58	14.85	19.83	5.09	20.45

[a]N = 134
[b]N = 144

The MANOVA examined extraversion, age, use of Facebook, and use of Twitter as covariates, and potential career resource relationships, acted-on career resource relationships, weak-tie relationships, contacts in higher functions, and contacts in other functions as dependent variables, and non-LI and LI subgroup status as independent variables (Pillai's Trace = 0.064, F (2, 276) = 3.65, p = 0.003, Partial Eta Squared = 0.07). These results indicated support the hypotheses, with significant differences between the two groups overall when controlling for the effects of potentially biasing elements extraversion personality traits, age, and the use of Facebook and Twitter. One-way ANOVAs were calculated to evaluate the individual hypotheses.

Hypothesis 1. The first hypothesis stated that those who were members of LI would have greater reported amounts of weak tie social capital resources. The mean number of weak ties for the non-LI subgroup was 4.24 (*SD* = 4.40) and the LI members' mean was 6.34 (*SD* = 5.84). The results support this hypothesis and were significant ($p < 0.001$ (F (1, 277) = 13.79, Partial Eta Squared = 0.05).

Hypothesis 2. The second hypothesis predicted that the LI member group would report greater amounts of the career social resources, *contacts in other function* and *contacts at higher levels*, than the non-LI member subgroup. Non-LI members had an average of 3.21 (*SD* = 3.66) contacts in other function and 3.19 (*SD* = 4.23) contacts in higher functions. LI members had an average of 4.21 (*SD* = 4.52) contacts on other functions and 4.29 (*SD* = 3.09) contacts in higher functions. The observed differences were significant at $p = 0.038$ (F (1, 277) = 4.34, Partial Eta Squared = 0.02) for contacts in other functions, and contacts at higher levels at $p = 0.003$ (F (1, 277) = 8.91, Partial Eta Squared = 0.03).

Hypotheses 3 and 4. These hypotheses predicted that, when compared to the non-LI group, the LI member group would report more potential relationships to help his or her career, as well as those that have provided resources in the past. Non-LI members had an average of 4.61 (*SD* = 4.39) potential career resource relationships and 2.94 (*SD* = 4.23) previously acted-on career resources relationships. LI members had an average of 6.52 (*SD* = 4.65) potential career resource relationships and 4.27 (*SD* = 4.92) previously acted-on career resources relationships. The observed differences between the LI and non-LI member groups were significant at $p < 0.000$ (F(1, 277) = 12.93, Partial Eta Squared =

0.05) for potential career resources relationships and $p = 0.015$ (F(1, 277) = 5.99, Partial Eta Squared = 0.02).

Hypothesis 5. Age and extraversion were predicted to significantly emerge as covariates in the relations described in hypotheses 1-4. Although the overall MANOVA results containing these variables as covariates were significant, only two of the potential ten relations were significant when examining them at the individual-variable level. Extraversion was a significant covariate for potential career resources ($p = 0.046$, F(1, 277) = 4.01, Partial Eta Squared = 0.02) and age was significant for weak ties ($p = 0.028$, F(1, 277) = 4.87, Partial Eta Squared = 0.02).

Hypothesis 6. A MANOVA was used to test the hypothesis that LI members would be more active on Facebook and Twitter than the non-LI member subgroup. Facebook and Twitter use intensity were entered into the model as dependent variables and a grouping variable was entered as the fixed factor. The results were significant at $p <$ 0.000 (F(2, 276) = 18.99, Partial Eta Squared = 0.12) for the overall model, and were also significant at $p < 0.000$ for both Facebook and Twitter intensity use (Facebook, F(1, 277) = 24.95, Partial Eta Squared = 0.08; Twitter, F(1,277) 25.49, Partial Eta Squared = 0.09).

Hypothesis 7. Similar to Hypothesis 5, Facebook and Twitter use were predicted to covary the relations predicted in Hypotheses 1-4. Of the ten possible relations, none were significant for Twitter use, yet potential career resource relationships and contacts at higher levels were significant for Facebook Intensity (potential relationships, $p = 0.044$, F(1, 277) = 4.09, Partial Eta Squared = 0.02; higher levels, $p = 0.013$, (F(1,277) = 6.21, Partial Eta Squared = 0.02).

Discussion

This study was the first to demonstrate the potential added benefits of using online social media to advance one's work-related social capital versus non-online methods. Moreover, the resources measured in the current study have been empirically connected to discrete indicators of career success (e.g., salary & promotion) (Siebert et al., 2001). A meta-analysis that focused on career success predictors (e.g., social capital, organizational sponsorship, sociodemographic status, & individual differences) determined that social capital was the most predictive for objective measures of success (Ng, Eby, Sorensen, & Feldman, 2005).

One characteristic and key advertised purpose of Linkedin is that the site can broaden one's career contacts and opportunities. Despite this assumption, there is no known evidence that any social networking website, LI included, leads to greater success in one's career than not engaging in these types of sites. The current data suggest that those who use LI have larger pools of career success-related resources than those who do not, even when controlling for the potentially biasing effects of one's personality (i.e., extraversion), age, and frequency of the use of other social networking sites (e.g., Twitter & Facebook).

Although the overall results endorse most of the hypotheses, the covariates examined at the individual variable level, as opposed to collectively in the MANOVAs, were less supportive. Specifically, the influence of extraversion, age, Facebook use, and Twitter use on career success resources was significantly detected in only two of the 20 potential relations. One of these potential covariate relations for extraversion was supported with self-reported higher extraverted participants having significantly larger groups of

potential career resource contacts. The career resources element of this result is novel for social media research and aligns with the “rich get richer” perspective, where extraverted individuals thrive in the environment of online social media (Ong et al., 2010).

Deciding to focus solely on the social networking site LI is worth some consideration. The nature of LI is strictly professional, therefore making the site an appropriate match for the focus of the study. However, there may be interactions on other sites that can lead to career success, despite the potential of other sites being controlled for in the current study by analyzing Facebook and Twitter use as covariates. The role of LI is relatively stable in that it is rarely and even difficult to be used for strictly social interactions. For example, LI user profiles contain no non-work related personal information such as hobbies or interests, and the site also does not have a chat function, which can be found on Facebook.

Although attempts to control for confounding variables were made, this study still suffers from the weaknesses of cross-sectional research. Detecting relations that exist in a snapshot of time without the benefits of true random assignment and sampling exposes the results of this study to justifiable criticism. However, the sample for the study was full-time working professionals, a condition that is not the case for a great deal of research that is still in its nascent state that typically relies on student samples. As mentioned in Study One of the current research, data collected from Amazon’s Mechanical Turk were reviewed in a recent research study and determined to be adequately reliable (Buhrmester et al., 2011). A tangential ambition of the current study is that its results might encourage additional research on the effects of web-based social media with more rigorous study designs. Without an initial study such as this, it may be

difficult to justify the resources needed to conduct a larger scale, more defendable study such as one that incorporates strengths of research strategies such as longitudinal design or time series.

Conclusion

The current study demonstrated that individuals who use the business social networking website, Linkedin, report greater numbers of social resources that are related to success in one's career. This study provides a novel contribution to research on career success, social capital, and the emerging area of research that focuses on the effects of the use of social networking websites. These results were still supported when controlling for the potentially biasing effects of personality (i.e., extraversion), age, and frequency of the use of other social networking sites (e.g., Twitter & Facebook).

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Appendices

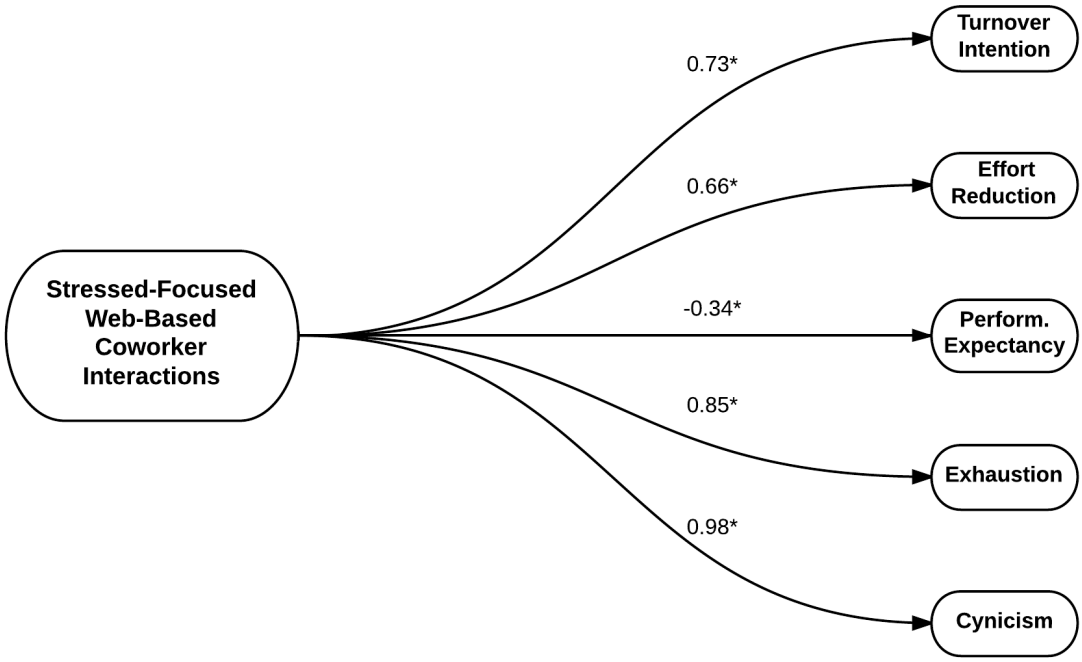

Figure 3. SEM standardized estimates for hypothesis 1. *$p < .05$

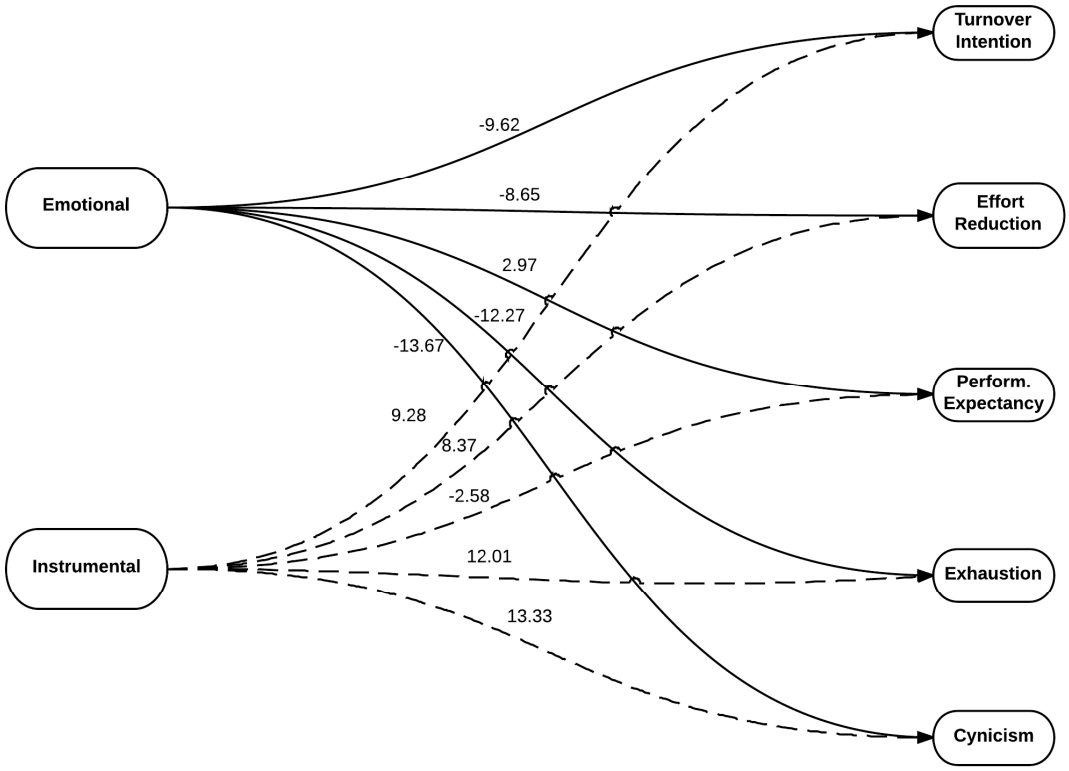

Figure 4. SEM standardized estimates for hypothesis 2, part one.

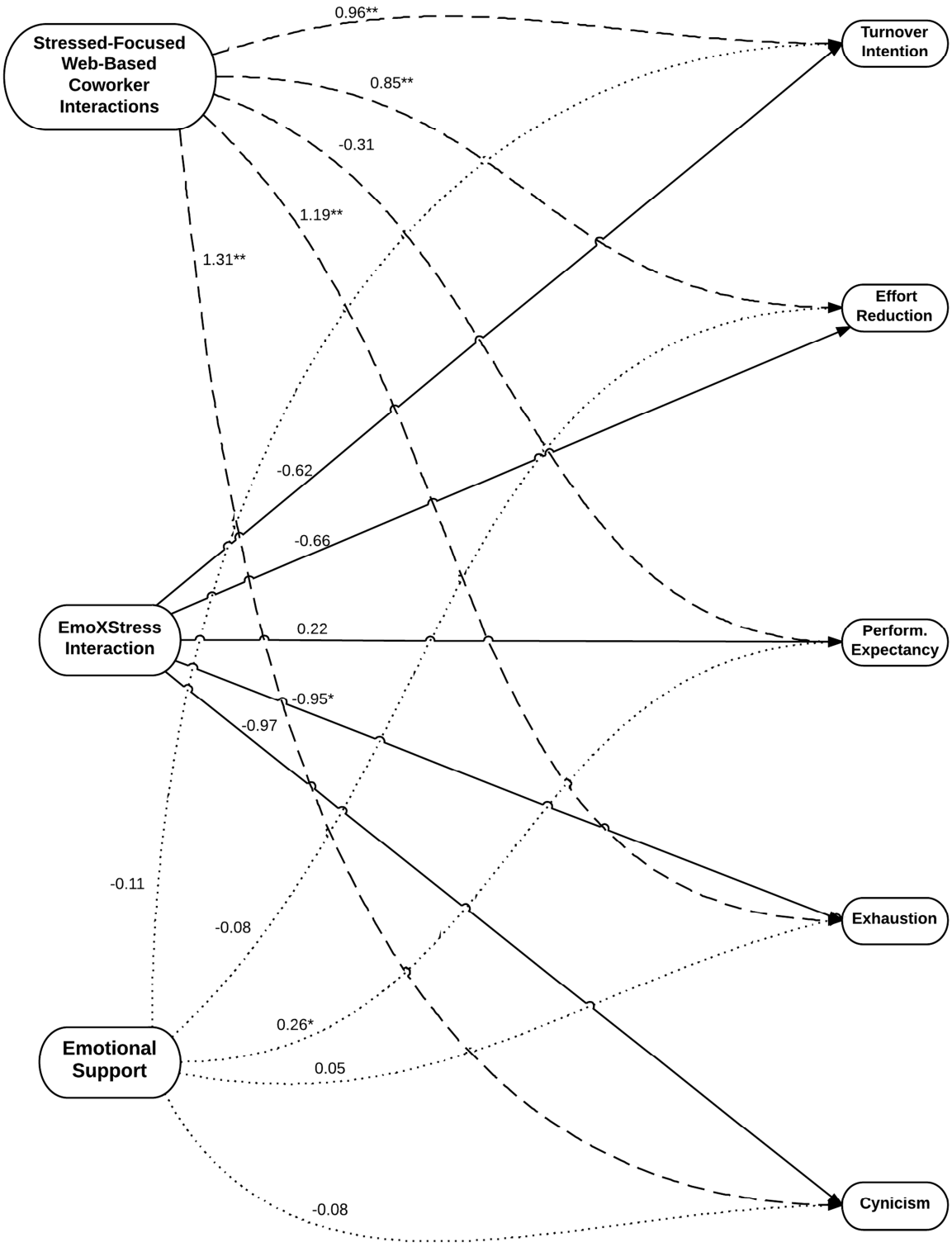

Figure 5. SEM standardized estimates for hypothesis 2, part two, emotional coworker support. *$p < .05$, **$p < .01$

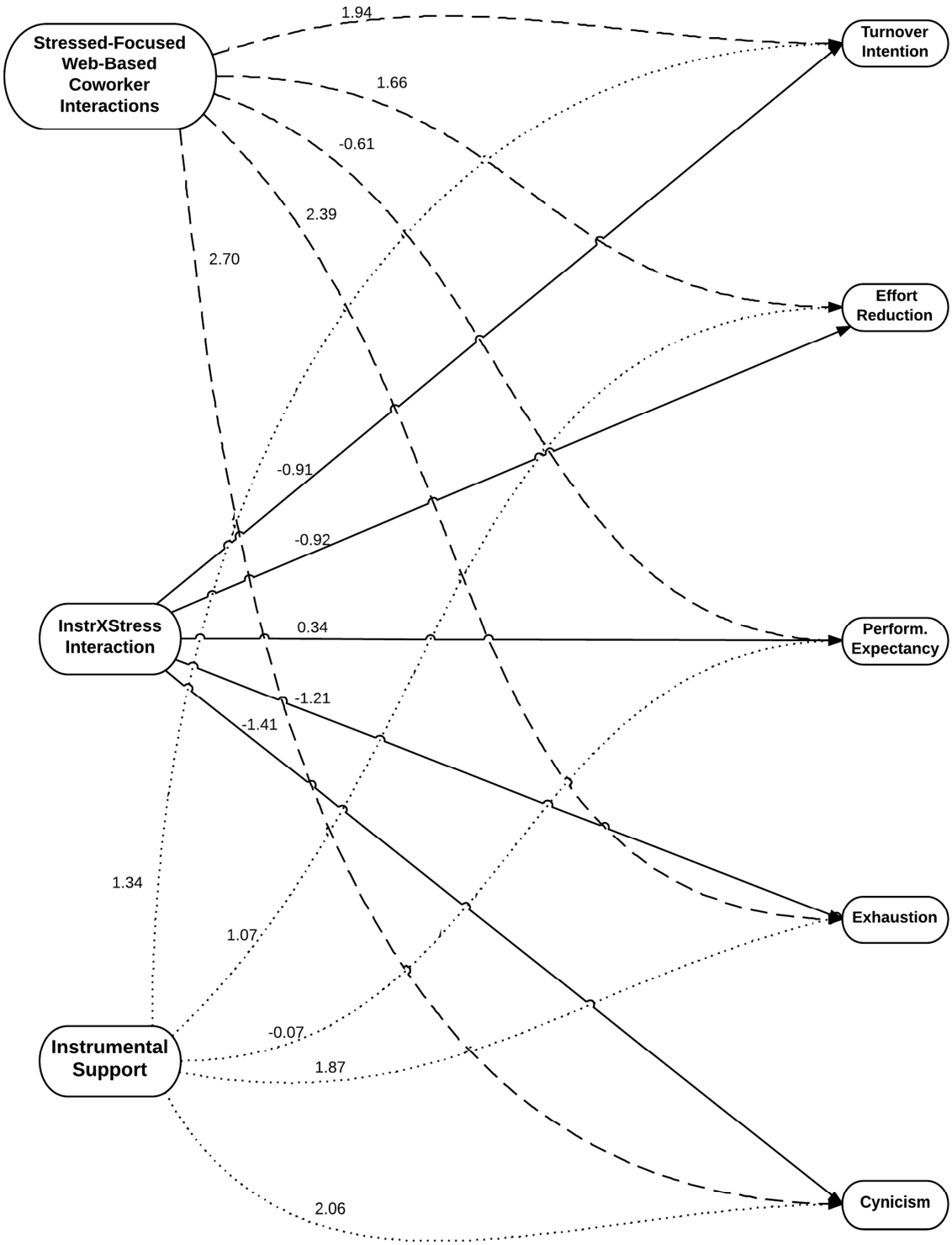

Figure 6. SEM standardized estimates for hypothesis 2, part two, instrumental coworker support. *$p < .05$, **$p < .01$

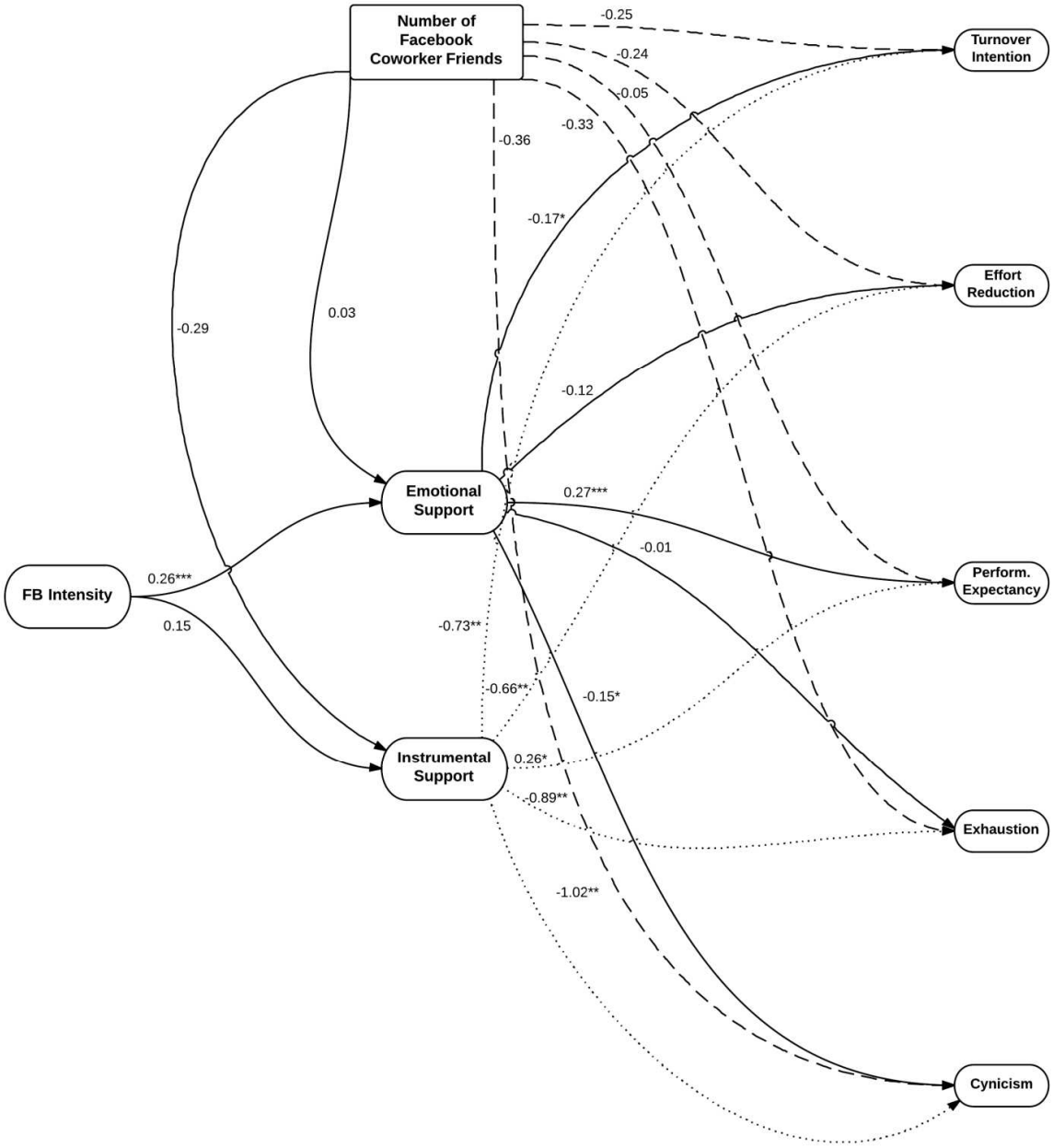

Figure 7. SEM standardized estimates for hypothesis 3 and 4, Facebook version. *p < .05, **p < .01, ***p < .001

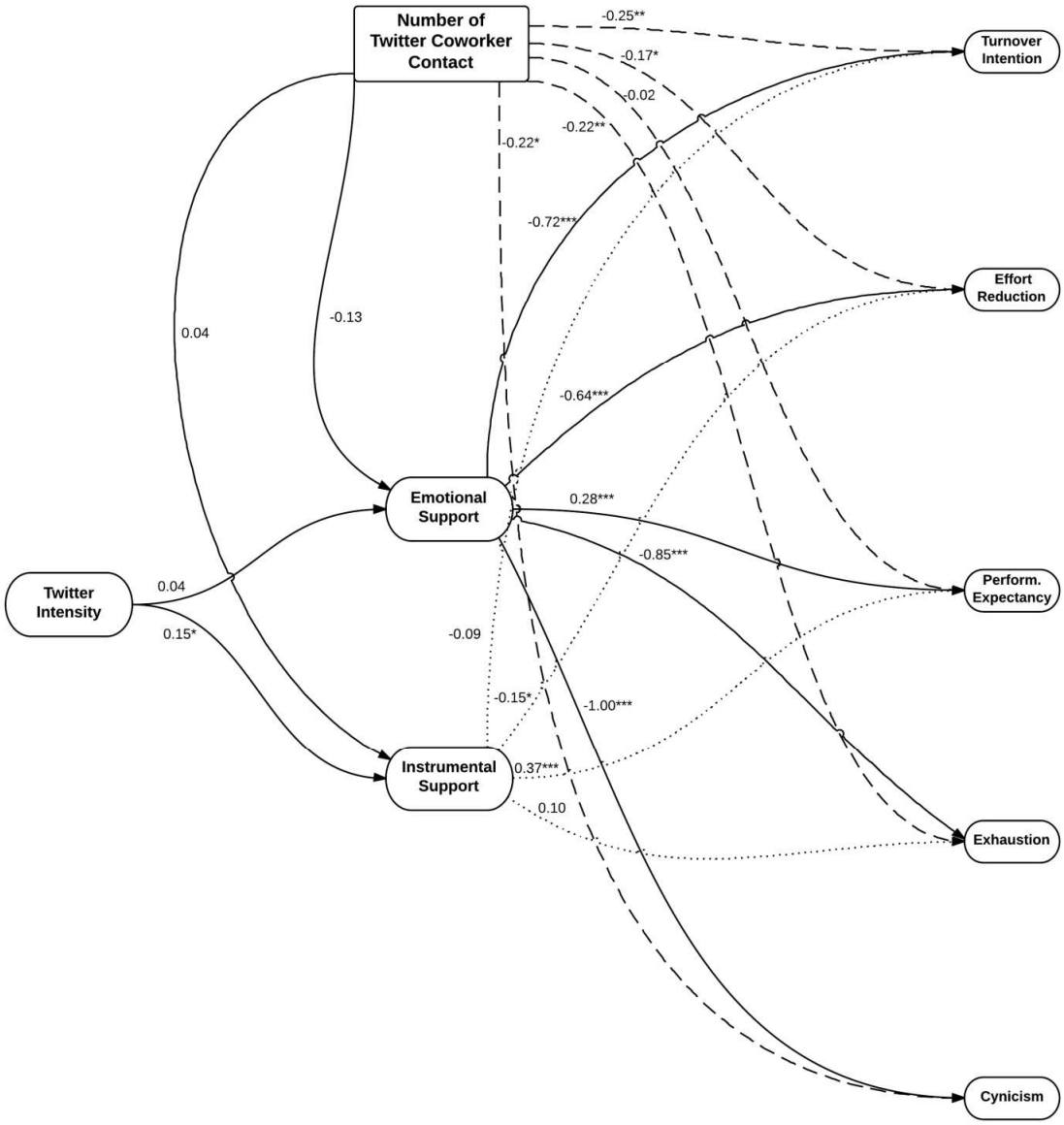

Figure 8. SEM standardized estimates for hypothesis 3 and 4, Twitter version. *$p < .05$, **$p < .01$, ***$p < .001$

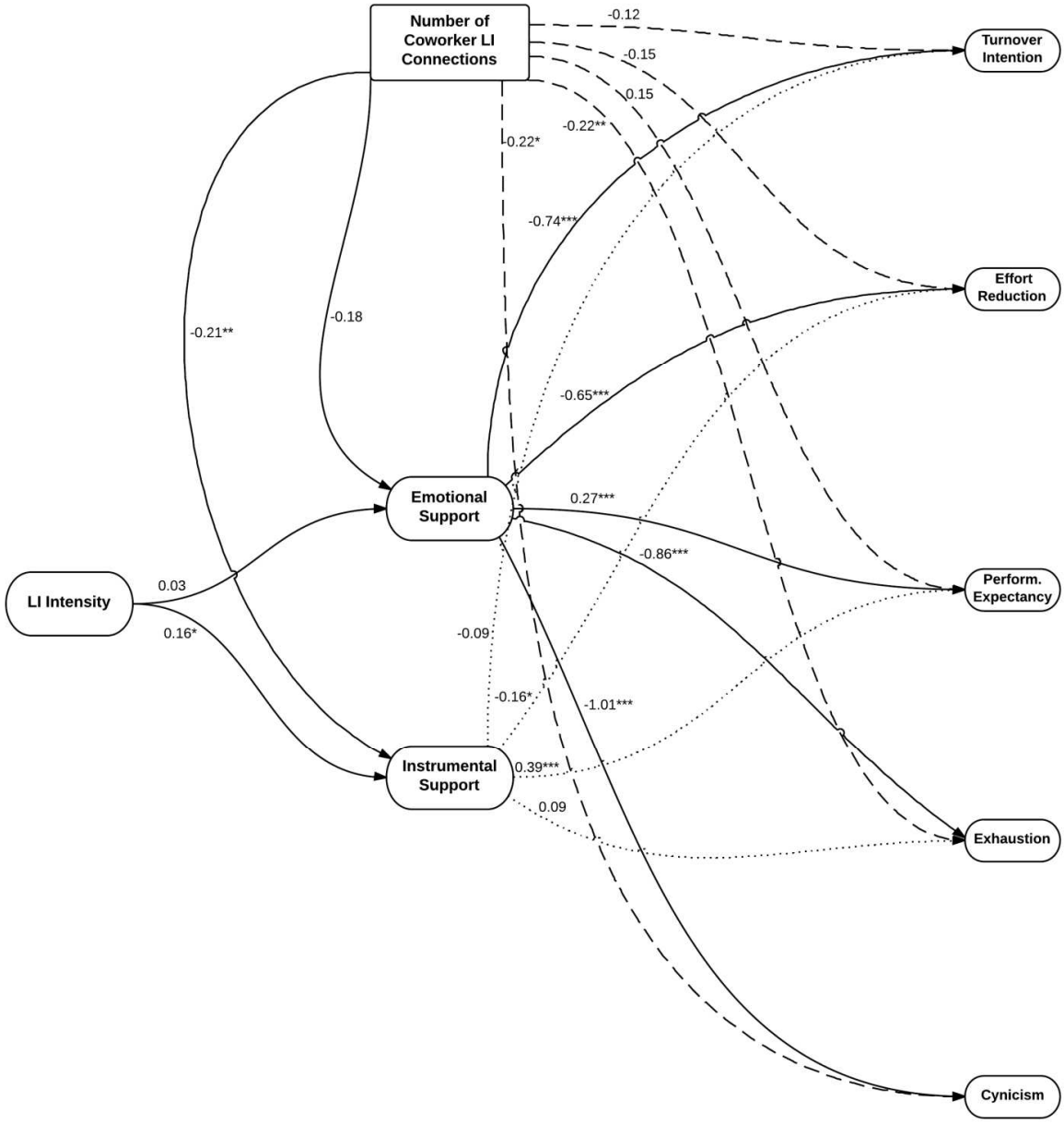

Figure 9. SEM standardized estimates for hypothesis 3 and 4, Linkedin version. *$p < .05$, **$p < .01$, ***$p < .001$

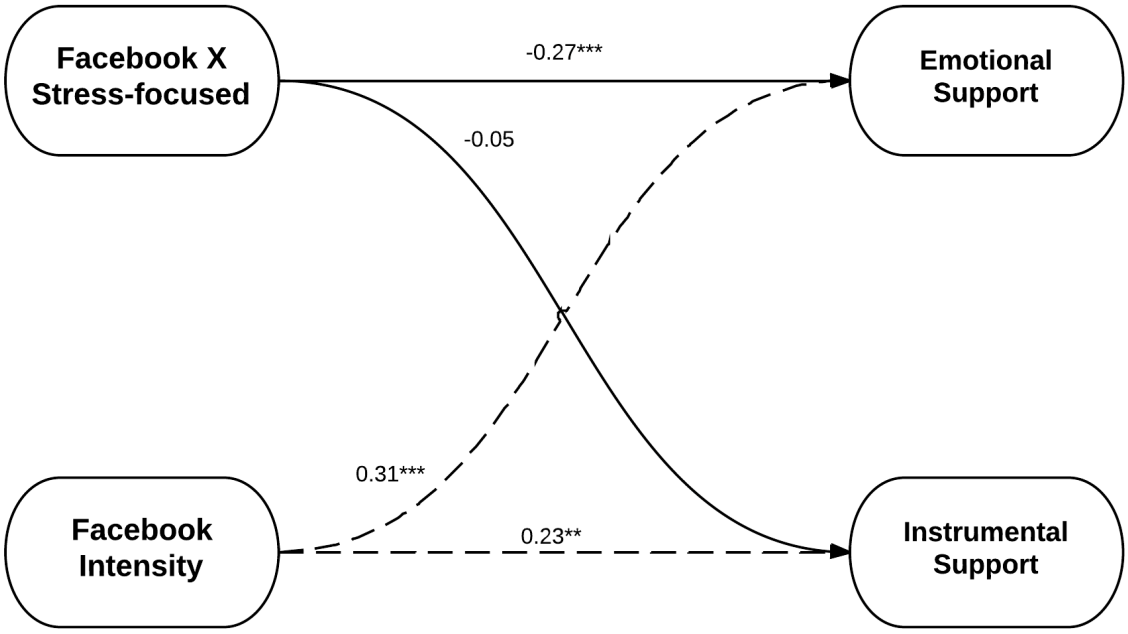

Figure 10. SEM standardized estimates for hypothesis 5, Facebook version. **$p < .01$, ***$p < .001$

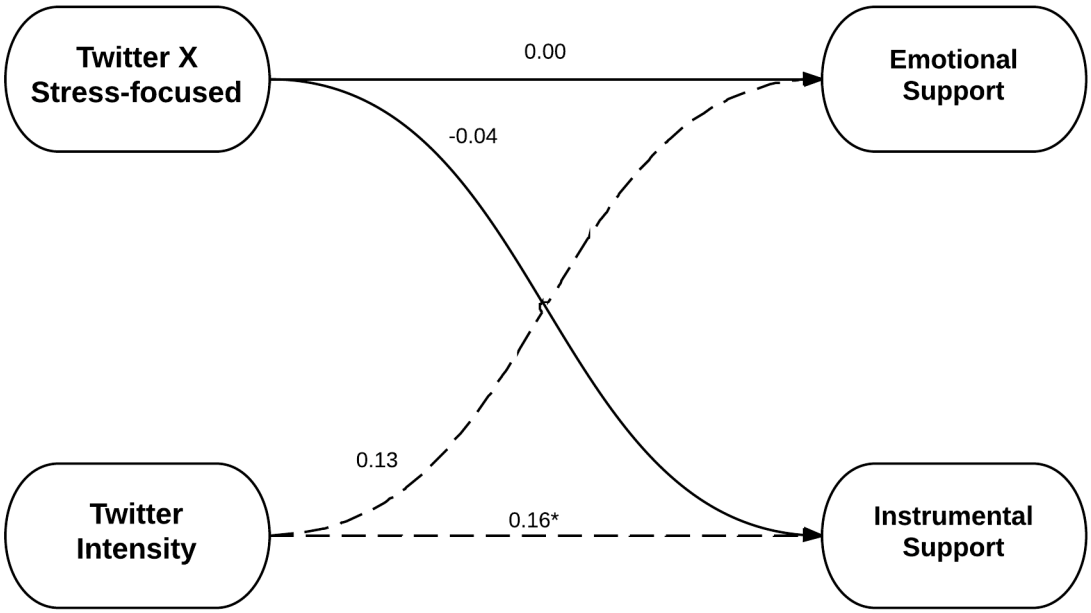

Figure 11. SEM standardized estimates for hypothesis 5, Twitter version. **$p < .01$,

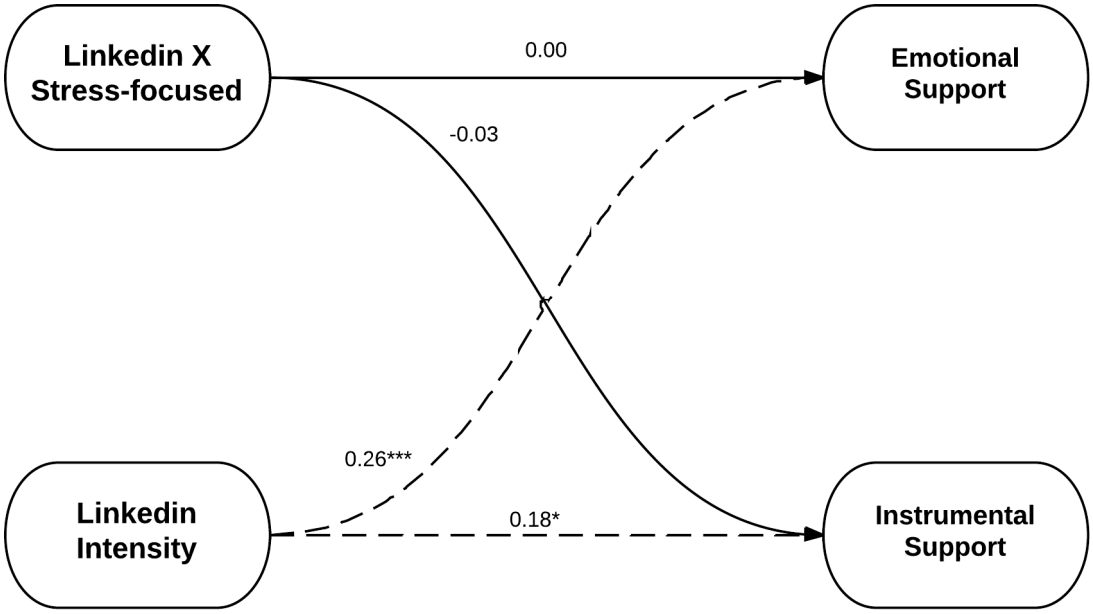

Figure 12. SEM standardized estimates for hypothesis 5, Linkedin version. *$p < .05$, ***$p < .001$